

In re: Maetzke, et al.
Serial No.: To be assigned
Filed: Concurrently herewith
For: **NOVEL HERBICIDES**

Date: March 6, 2002

BOX DO/EO/US
Commissioner for Patents
Washington, DC 20231

APPLICATION FILED UNDER 37 CFR 1.41(c)

Sir:

The above-identified application is being filed on behalf of the inventors, Thomas MAETZKE, resident of Munchenstein, Switzerland; André STOLLER, resident of Blotzheim, France; Sebastian WENDERBORN, resident of Binningen, Switzerland; and Henry SZCZEPANSKI, resident of Wallbach, Switzerland, under the provisions of 37 CFR 1.41(c). A Declaration and Power of Attorney from the inventors will follow, 37 CFR 1.63.

Respectfully submitted,



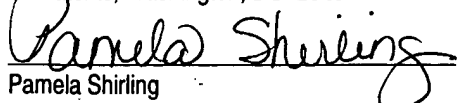
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CERTIFICATE OF EXPRESS MAILING

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Pamela Shirling

10/070767

JC10 Rec'd PTO 06 MAR 2002
CASE PH/5-31141A

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Pamela Shirling
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Pamela Shirling
Signature

March 6, 2002
Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF

MAETZKE ET AL.

APPLICATION NO: NOT YET ASSIGNED

FILED: CONCURRENTLY HERewith

FOR: NOVEL HERBICIDES

Commissioner for Patents
Washington, DC 20231

CLAIM OF PRIORITY UNDER 35 USC §119

Sir:

Applicants in the above-identified application hereby claim priority under the International Convention of Application No. CH 1642/99, filed on September 7, 1999. This application is acknowledged in the Declaration of the instant case.

The certified copy of said application and its English translation are submitted herewith.

Respectfully submitted,

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Rose M. Allen
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Date: March 6, 2002

10/070767

JC10 Rec'd PCT/PTO 06 MAR 2002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

I, VIVIEN IRENE COULSON, declare:

1. That I am a citizen of the United Kingdom of Great Britain and Northern Ireland, residing at 96 Langley Road, Watford, Hertfordshire, WD17 4PJ, England;
2. That I am well acquainted with the German and English languages;
3. That the attached is a true translation into the English language of the certified copy of Swiss Patent Application No. 1999 1642/99 filed 07.09.1999 and of the official certificate attached thereto;
4. That I believe that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardise the validity of the patent application in the United States of America or any patent issuing thereon.

Declared this

21st

day of

January 2002

V.I. Coulson

V.I. COULSON

SWISS CONFEDERATION

Certificate

The accompanying documents agree with the original technical supporting documents of the Patent Application for Switzerland and Liechtenstein indicated on the following page.

Switzerland and the Principality of Liechtenstein form a single area of protection. Protection can therefore be requested only for the two countries jointly.

Bern, 5th July 2000

Seal of the Federal Institute
for Intellectual Property

Federal Institute for Intellectual Property
Patents Administration

(signature)
Rolf Hofstetter

Patent Application No. 1999 1642/99

FILING CERTIFICATE (Art. 46 para. 5 PatV)

The Federal Institute for Intellectual Property certifies the receipt of the Swiss Patent Application detailed below.

Title :

Novel herbicides.

Patent Applicant:

Novartis AG

Schwarzwaldallee 215

4058 Basle

Date of Application: 07.09.1999

Probable classes: A01N, C07D

Unalterable copy

PH/5-31141P1

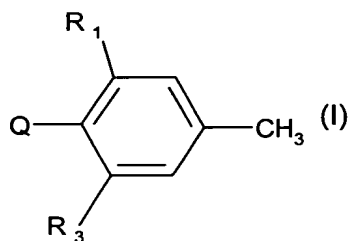
Novel herbicides

The present invention relates to novel herbicidally active heterocycles substituted by a phenyl group, to processes for the preparation thereof, to compositions comprising such compounds, and to the use thereof in controlling weeds, especially in crops of useful plants, or in inhibiting plant growth.

3-Hydroxy-4-aryl-5-oxo-pyrazoline derivatives having herbicidal action are described, for example, in EP-A-0 508 126, WO 96/25395 and WO 96/21652.

Novel heterocycles substituted by a phenyl group having herbicidal and growth-inhibiting properties have now been found.

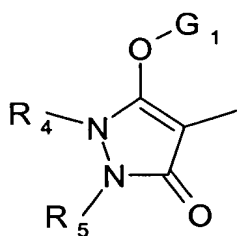
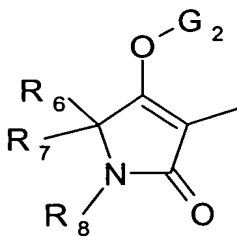
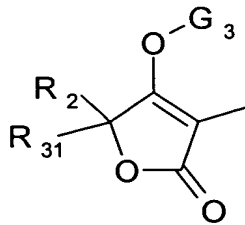
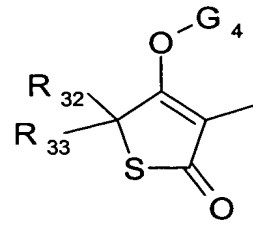
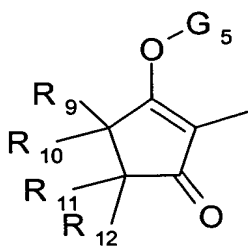
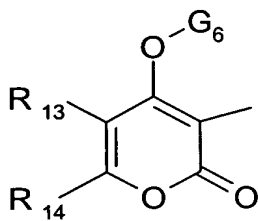
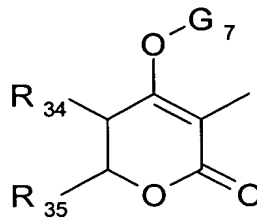
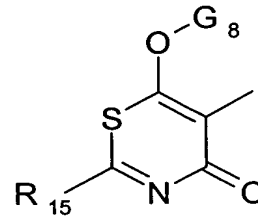
The present invention accordingly relates to compounds of formula I



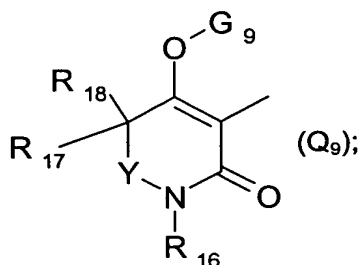
wherein

R₁ and R₃ are each independently of the other ethyl, haloethyl, ethynyl, C₁-C₂alkoxy, C₁-C₂haloalkoxy, C₁-C₂alkylcarbonyl, C₁-C₂hydroxyalkyl or C₁-C₂alkoxycarbonyl;

Q is a group

(Q₁),(Q₂),(Q₃),(Q₄),(Q₅),(Q₆),(Q₇),(Q₈)

or

(Q₉);

R₄ and R₅ are each independently of the other C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkylcarbonylalkyl, C₂-C₁₀-N-alkoxyiminoalkyl, C₂-C₁₀-alkoxycarbonylalkyl, C₁-C₁₀aminoalkyl, C₃-C₁₀dialkylaminoalkyl, C₂-C₁₀alkylaminoalkyl, C₁-C₁₀cyanoalkyl, C₄-C₁₀cycloalkylalkyl, C₁-C₁₀phenylalkyl, C₁-C₁₀heteroarylalkyl, C₁-C₁₀-phenoxyalkyl, C₁-C₁₀heteroaryloxyalkyl, C₁-C₁₀alkylideneaminoalkyl, C₁-C₁₀nitroalkyl, C₁-C₁₀trialkylsilylalkyl, C₂-C₁₀alkylaminocarbonylalkyl, C₂-C₁₀dialkylaminocarbonylalkyl, C₂-C₁₀alkylaminocarbonyloxyalkyl, C₃-C₁₀dialkylaminocarbonyloxyalkyl, C₂-C₁₀alkoxycarbonyl-

aminoalkyl, C₁-C₁₀-N-alkoxycarbonyl-N-alkylaminoalkyl, C₁-C₁₀cycloalkyl, aryl or heteroaryl;
or

R₄ and R₅, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur and that, in addition, may contain a fused or spiro-bound alkylene or alkenylene chain consisting of from 2 to 6 carbon atoms, which chain may in turn contain one or two hetero atoms selected from oxygen and sulfur;

R₂, R₆ and R₃₂ are each independently of the others C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀-alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfanylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkylcarbonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl;

R₇, R₃₁ and R₃₃ are each independently of the others hydrogen, C₁-C₁₀alkyl or C₂-C₁₀alkoxyalkyl;

R₈ is hydrogen, C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfanylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl; or

R₆ and R₇ or R₂ and R₃₁ or R₃₂ and R₃₃, together with the atom to which they are bonded, form a saturated 3- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur; or R₆ and R₈, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₉, R₁₀, R₁₁ and R₁₂ are each independently of the others C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfanylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkylcarbonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl; or

R₉ and R₁₁ or R₉ and R₁₀, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₁₃, R₁₄, R₃₄ and R₃₅ are each independently of the others C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfanylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkylcarbonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl; or

R₁₃ and R₁₄ or R₃₄ and R₃₅, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₁₅ is C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkylcarbonylalkyl, C₂-C₁₀alkoxycarbonylalkyl, C₁-C₁₀aminoalkyl, C₃-C₁₀dialkylaminoalkyl, C₂-C₁₀alkylaminoalkyl, C₁-C₁₀cyanoalkyl, C₄-C₁₀cycloalkylalkyl, C₁-C₁₀phenylalkyl, C₁-C₁₀heteroarylalkyl, C₁-C₁₀phenoxyalkyl, C₁-C₁₀heteroaryloxyalkyl, C₁-C₁₀nitroalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl;

R₁₆ is C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthiolalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl;

R₁₇ is C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkylcarbonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl;

R₁₈ is hydrogen, C₁-C₁₀alkyl or C₁-C₁₀alkoxyalkyl;

R₁₇ and R₁₈, together with the atoms to which they are bonded, form a 3- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

Y is oxygen, sulfur, C-R₁₉ or N-R₃₆;

R₁₉ and R₃₆ are each independently of the other C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, phenyl or heteroaryl; or

R₁₈ and R₁₉ or R₁₈ and R₃₆, together with the atom to which they are bonded, form a saturated 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

G₁, G₂, G₃, G₄, G₅, G₆, G₇, G₈ and G₉ are each independently of the others hydrogen, -C(X₁)-R₂₀, -C(X₂)-X₃-R₂₁, -C(X₄)-N(R₂₂)-R₂₃, -SO₂-R₂₄, an alkali metal cation, alkaline earth metal cation, sulfonium cation or ammonium cation, -P(X₅)(R₂₅)-R₂₆ or -CH₂-X₆-R₂₇;

X₁, X₂, X₃, X₄, X₅ and X₆ are each independently of the others oxygen or sulfur;

R₂₀, R₂₁, R₂₂ and R₂₃ are each independently of the others hydrogen, C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₁-C₁₀cyanoalkyl, C₁-C₁₀nitroalkyl, C₁-C₁₀aminoalkyl, C₁-C₅alkylamino-C₁-C₅alkyl, C₂-C₈dialkylamino-C₁-C₅alkyl, C₃-C₇cycloalkyl-C₁-C₅alkyl, C₂-C₁₀alkoxyalkyl, C₄-C₁₀alkenyloxyalkyl, C₄-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₁-C₅alkylsulfoxyl-C₁-C₅alkyl, C₁-C₅alkylsulfonyl-C₁-C₅alkyl, C₂-C₈alkylideneaminoxy-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-C₁-C₅alkyl,

C₁-C₅alkoxycarbonyl-C₁-C₅alkyl, C₁-C₅aminocarbonyl-C₁-C₅alkyl, C₂-C₈dialkylaminocarbonyl-C₁-C₅alkyl, C₁-C₅alkylcarbonylamino-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-(C₂-C₅alkyl)-aminoalkyl, C₃-C₆trialkylsilyl-C₁-C₅alkyl, phenyl-C₁-C₅alkyl, heteroaryl-C₁-C₅alkyl, phenoxy-C₁-C₅alkyl, heteroaryloxy-C₁-C₅alkyl, C₂-C₅alkenyl, C₂-C₅haloalkenyl, C₃-C₈cycloalkyl, phenyl, or phenyl substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or heteroaryl or heteroaryl amino, or heteroaryl or heteroaryl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diheteroaryl amino, or diheteroaryl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, phenyl amino, or phenyl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diphenyl amino, or diphenyl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or C₃-C₇cycloalkyl amino, di-C₃-C₇cycloalkyl amino or C₃-C₇cycloalkoxy;

R₂₄, R₂₅ and R₂₆ are hydrogen, C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₁-C₁₀cyanoalkyl, C₁-C₁₀nitroalkyl, C₁-C₁₀aminoalkyl, C₁-C₅alkylamino-C₁-C₅alkyl, C₂-C₈dialkylamino-C₁-C₅alkyl, C₃-C₇cycloalkyl-C₁-C₅alkyl, C₂-C₁₀alkoxyalkyl, C₄-C₁₀alkenyloxyalkyl, C₄-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₁-C₅alkylsulfoxyl-C₁-C₅alkyl, C₁-C₅alkylsulfonyl-C₁-C₅alkyl, C₂-C₈alkylideneaminoxy-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-C₁-C₅alkyl, C₁-C₅alkoxycarbonyl-C₁-C₅alkyl, C₁-C₅aminocarbonyl-C₁-C₅alkyl, C₂-C₈dialkylaminocarbonyl-C₁-C₅alkyl, C₁-C₅alkylcarbonylamino-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-(C₂-C₅alkyl)-aminoalkyl, C₃-C₆trialkylsilyl-C₁-C₅alkyl, phenyl-C₁-C₅alkyl, heteroaryl-C₁-C₅alkyl, phenoxy-C₁-C₅alkyl, heteroaryloxy-C₁-C₅alkyl, C₂-C₅alkenyl, C₂-C₅haloalkenyl, C₃-C₈cycloalkyl, phenyl, or phenyl substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or heteroaryl or heteroaryl amino, or heteroaryl or heteroaryl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diheteroaryl amino, or diheteroaryl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, phenyl amino, or phenyl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diphenyl amino, or diphenyl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or C₃-C₇cycloalkyl amino, di-C₃-C₇cycloalkyl amino, C₃-C₇cycloalkoxy, C₁-C₁₀alkoxy, C₁-C₁₀haloalkoxy, C₁-C₅alkylamino, C₂-C₈dialkylamino, benzyloxy or phenoxy, wherein the benzyl and phenyl groups may in turn be substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro;

R₂₇ is C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₁-C₁₀cyanoalkyl, C₁-C₁₀nitroalkyl, C₁-C₁₀aminoalkyl, C₁-C₅alkylamino-C₁-C₅alkyl, C₂-C₈dialkylamino-C₁-C₅alkyl, C₃-C₇cycloalkyl-C₁-C₅alkyl, C₂-C₁₀alkoxyalkyl, C₄-C₁₀alkenyloxyalkyl, C₄-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₁-C₅alkylsulfoxyl-C₁-C₅alkyl, C₁-C₅alkylsulfonyl-C₁-C₅alkyl, C₂-C₈alkylideneaminooxy-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-C₁-C₅alkyl, C₁-C₅alkoxycarbonyl-C₁-C₅alkyl, C₁-C₅aminocarbonyl-C₁-C₅alkyl, C₂-C₈dialkylaminocarbonyl-C₁-C₅alkyl, C₁-C₅alkylcarbonylamino-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-(C₂-C₅alkyl)-aminoalkyl, C₃-C₆trialkylsilyl-C₁-C₅alkyl, phenyl-C₁-C₅alkyl, heteroaryl-C₁-C₅alkyl, phenoxy-C₁-C₅alkyl, heteroaryloxy-C₁-C₅alkyl, C₂-C₅alkenyl, C₂-C₅haloalkenyl, C₃-C₈cycloalkyl, phenyl, or phenyl substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or heteroaryl or heteroaryl amino, or heteroaryl or heteroaryl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diheteroaryl amino, diheteroaryl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or phenyl amino, phenyl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diphenyl amino, diphenyl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, C₃-C₇cycloalkyl amino, di-C₃-C₇cycloalkyl amino, C₃-C₇cycloalkoxy or C₁-C₁₀alkylcarbonyl.

The alkyl groups occurring in the substituent definitions may be straight-chain or branched and are, for example, methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl and the isomers of pentyl, hexyl, heptyl, octyl, nonyl and decyl. Haloalkyl is, for example, fluoromethyl, difluoromethyl, trifluoromethyl, chloromethyl, dichloromethyl, trichloromethyl, 2,2,2-trifluoroethyl, 2-fluoroethyl, 2-chloroethyl, pentafluoroethyl, 1,1-difluoro-2,2,2-trichloroethyl, 2,2,3,3-tetrafluoroethyl and 2,2,2-trichloroethyl; preferably trichloromethyl, difluorochloromethyl, difluoromethyl, trifluoromethyl and dichlorofluoromethyl. Alkoxyalkyl is, for example, methoxymethyl, ethoxymethyl, propoxyethyl, isopropoxyethyl, n-butoxymethyl, isobutoxy-n-butyl, sec-butoxymethyl and tert-butoxyisopropyl, preferably methoxymethyl and ethoxymethyl. Alkoxy, alkenyl, alkynyl, alkoxyalkyl, alkylthio, alkylsulfonyl, alkylamino-carbonyl, dialkylaminocarbonyl, alkylaminoalkyl, phenylalkyl, nitroalkyl, aminoalkyl and N-alkoxycarbonyl-N-alkylaminoalkyl groups are derived from the mentioned alkyl radicals. The alkenyl and alkynyl groups may be mono- or poly-unsaturated. Alkenyl is to be understood as meaning, for example, vinyl, allyl, methallyl, 1-methylvinyl or but-2-en-1-yl. Alkynyl is, for example, ethynyl, propargyl, but-2-yn-1-yl, 2-methylbutyn-2-yl or but-3-yn-2-yl. Alkynyl is, for example, ethynyl, propargyl, but-2-yn-1-yl, 2-methylbutyn-2-yl or but-3-yn-2-yl.

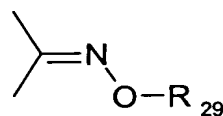
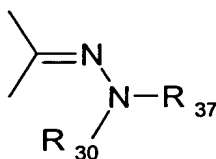
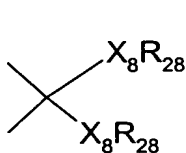
Haloalkyl groups preferably have a chain length of from 1 to 4 carbon atoms. Haloalkyl is, for example, fluoromethyl, difluoromethyl, trifluoromethyl, chloromethyl, dichloromethyl, trichloromethyl, 2,2,2-trifluoroethyl, 2-fluoroethyl, 2-chloroethyl, pentafluoroethyl, 1,1-difluoro-2,2,2-trichloroethyl, 2,2,3,3-tetrafluoroethyl or 2,2,2-trichloroethyl; preferably trichloromethyl, difluorochloromethyl, difluoromethyl, trifluoromethyl or dichlorofluoromethyl. Suitable haloalkenyl groups include alkenyl groups mono- or poly-substituted by halogen, halogen being fluorine, chlorine, bromine or iodine and especially fluorine or chlorine, for example 2,2-difluoro-1-methylvinyl, 3-fluoropropenyl, 3-chloropropenyl, 3-bromopropenyl, 2,3,3-trifluoropropenyl, 2,3,3-trichloropropenyl and 4,4,4-trifluorobut-2-en-1-yl. Of the C₂-C₆alkenyl groups mono-, di- or tri-substituted by halogen, preference is given to those having a chain length of from 3 to 5 carbon atoms. Alkoxy groups preferably have a chain length of from 1 to 6 carbon atoms. Alkoxy is, for example, methoxy, ethoxy, propoxy, isopropoxy, n-butoxy, isobutoxy, sec-butoxy or tert-butoxy and the isomers of pentyloxy and hexyloxy; preferably methoxy and ethoxy. Alkylcarbonyl is preferably acetyl or propionyl. Alkoxy carbonyl is, for example, methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, n-butoxycarbonyl, isobutoxycarbonyl, sec-butoxycarbonyl or tert-butoxycarbonyl; preferably methoxycarbonyl or ethoxycarbonyl. Alkylthio groups preferably have a chain length of from 1 to 4 carbon atoms. Alkylthio is, for example, methylthio, ethylthio, propylthio, isopropylthio, n-butylthio, isobutylthio, sec-butylthio or tert-butylthio, preferably methylthio or ethylthio. Alkylsulfinyl is, for example, methylsulfinyl, ethylsulfinyl, propylsulfinyl, isopropylsulfinyl, n-butylsulfinyl, isobutylsulfinyl, sec-butylsulfinyl or tert-butylsulfinyl; preferably methylsulfinyl or ethylsulfinyl. Alkylsulfonyl is, for example, methylsulfonyl, ethylsulfonyl, propylsulfonyl, isopropylsulfonyl, n-butylsulfonyl, isobutylsulfonyl, sec-butylsulfonyl or tert-butylsulfonyl; preferably methylsulfonyl or ethylsulfonyl. Alkylamino is, for example, methylamino, ethylamino, n-propylamino, isopropylamino or the butylamine isomers. Dialkylamino is, for example, dimethylamino, methylethylamino, diethylamino, n-propylmethylamino, dibutylamino or diisopropylamino. Alkoxyalkyl groups preferably have from 1 to 6 carbon atoms. Alkoxyalkyl is, for example, methoxymethyl, methoxyethyl, ethoxymethyl, ethoxyethyl, n-propoxymethyl, n-propoxyethyl, isopropoxymethyl or isopropoxyethyl. Alkylthioalkyl is, for example, methylthiomethyl, methylthioethyl, ethylthiomethyl, ethylthioethyl, n-propylthiomethyl, n-propylthioethyl, isopropylthiomethyl, isopropylthioethyl, butylthiomethyl, butylthioethyl or butylthiobutyl. Phenyl may be in substituted form. The substituents may in that case be in the ortho, meta and/or para position. Preferred substituents positions are the ortho and para positions relative to the point of attachment to the ring.

Aryl is, for example, phenyl or naphthyl. Those groups may also be substituted. When not specified otherwise in the definitions, phenyl, also as part of a substituent such as phenyl-alkyl, may, for example, be substituted by halogen, nitro, cyano, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfoxy, C₁-C₄alkylsulfonyl, carboxyl, C₁-C₄alkoxycarbonyl, amino, C₁-C₄alkylamino, C₁-C₄dialkylamino or by C₁-C₄alkylcarbonylamino.

Heteroaryl groups are usually aromatic heterocycles that contain preferably from 1 to 3 hetero atoms, such as nitrogen, sulfur and oxygen. Examples of suitable heterocycles and heteroaromatic compounds include: pyrrolidine, piperidine, pyran, dioxane, azetidine, oxetane, pyridine, pyrimidine, triazine, thiazole, thiadiazole, imidazole, oxazole, isoxazole and also pyrazine, furan, morpholine, piperazine, pyrazole, benzoxazole, benzthiazole, quinoxaline and quinoline. Those heterocycles and heteroaromatic compounds may be further substituted, for example by halogen, alkyl, alkoxy, haloalkyl, haloalkoxy, nitro, cyano, thioalkyl, alkylamino or by phenyl.

Within the scope of the present invention, 3- to 7-membered cyclic groups are to be understood as meaning ring systems that may contain, besides the carbon atoms, one or more hetero atoms, such as nitrogen, oxygen and/or sulfur. They may be saturated or unsaturated. Preferably, such ring systems contain from 5 to 7 ring atoms.

3- to 7-membered cyclic groups, including the cycloalkyls, for example cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl or cyclooctyl, may also be substituted. Suitable substituents include halogen, hydroxy, nitro, cyano, C₁-C₄alkylcarbonyl, C₁-C₄alkoxycarbonyl, C₁-C₄alkyl, C₁-C₄haloalkyl, keto, C₂-C₄alkenyloxyimino, C₁-C₄alkoxy, C₁-C₄alkoxyalkoxy, C₁-C₄alkylthio, or one of the following three groups:

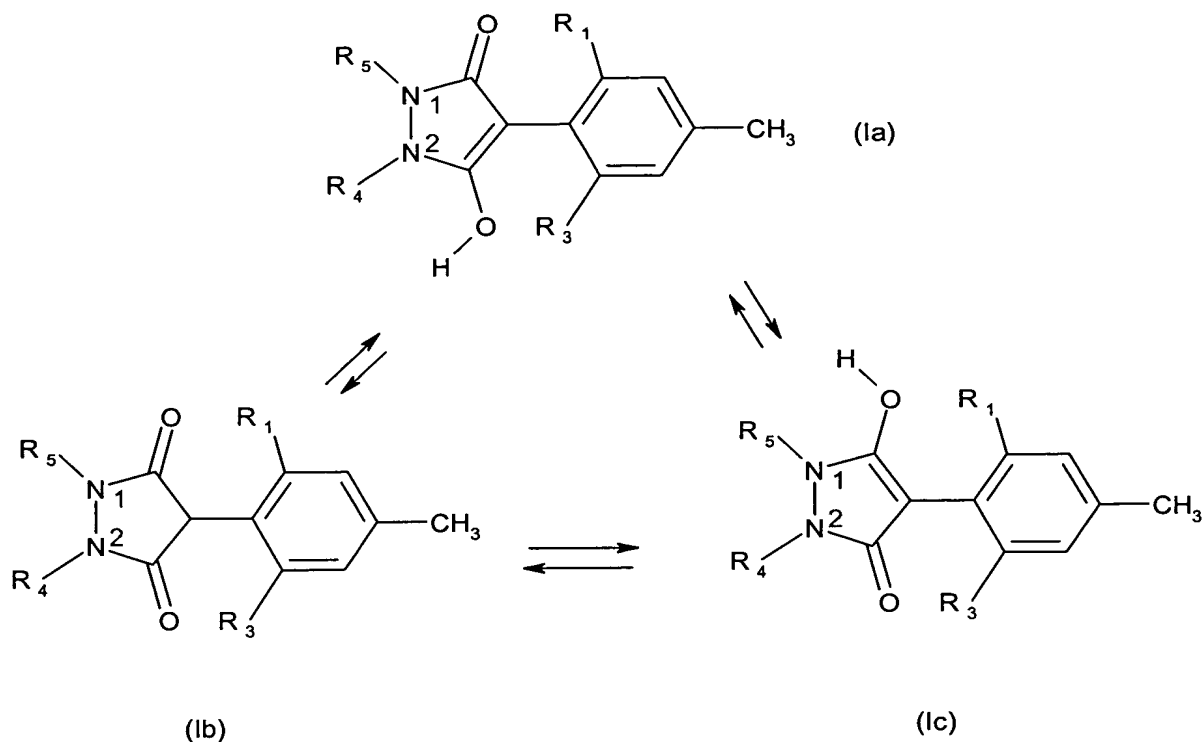


wherein X_8 is sulfur or oxygen, R_{28} is C_1 - C_4 alkoxy or the two R_{28} radicals, together with the $-X_8-C-X_8$ bridge to which they are bonded, form a 5- or 6-membered ring that may be substituted by methyl, ethyl, methoxy or by a keto group, R_{29} is C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_2 - C_4 alkenyl or C_2 - C_4 haloalkenyl, R_{30} and R_{37} are each independently of the other C_1 - C_4 alkyl, phenyl or C_2 - C_4 alkenyl, or R_{30} and R_{37} , together with the nitrogen atom to which they are bonded, form a 5- or 6-membered ring that may contain a hetero atom selected from nitrogen, oxygen and sulfur.

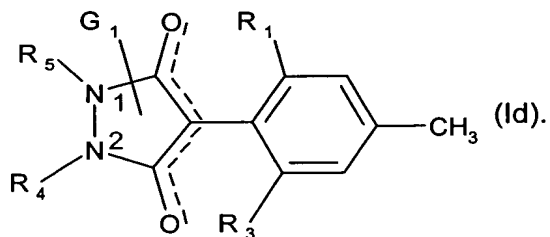
In the substituent definitions, the number of carbon atoms is the total number of carbon atoms in the alkyl, alkenyl and alkynyl groups and the groups derived therefrom, for example haloalkyl or alkenyloxy. C_2 - C_3 Alkoxyalkyl accordingly comprises methoxymethyl, methoxyethyl and ethoxymethyl. C_3 Alkoxy-carbonylalkyl comprises methoxycarbonylethyl and ethoxycarbonylmethyl.

Alkali metal, alkaline earth metal or ammonium cations for the substituents G_1 to G_9 are, for example, the cations of sodium, potassium, magnesium, calcium and ammonium. Preferred sulfonium cations are especially trialkylsulfonium cations in which the alkyl groups preferably each contain from 1 to 4 carbon atoms.

Depending on the nature of the substituents, the compounds of formula I may also be in the form of geometric and/or optical isomers and mixtures of isomers as well as in the form of tautomers and mixtures of tautomers. The present invention relates also to those compounds of formula I. For example, the compounds of formula I wherein Q is Q_1 and the group G_1 is hydrogen may be present in the following tautomeric equilibria:



When G_1 to G_9 is other than hydrogen and the cyclic group formed by R_4 and R_5 together is asymmetrically substituted, fused or spiro-bound, for example the compound of formula I may be present in the form of an isomer of formula Id



The invention likewise includes the salts that the compounds of formula I are able to form preferably with amines, alkali metal and alkaline earth metal bases or quaternary ammonium bases. Suitable salt formers are described, for example, in WO 98/41089.

The invention likewise includes the salts that the compounds of formula I are able to form with amines, alkali metal and alkaline earth metal bases or quaternary ammonium bases.

Of the alkali metal and alkaline earth metal hydroxides as salt formers, attention is drawn to the hydroxides of lithium, sodium, potassium, magnesium or calcium, but especially to those of sodium or potassium.

Examples of amines suitable for ammonium salt formation include both ammonia and also primary, secondary and tertiary C₁-C₁₈alkylamines, C₁-C₄hydroxyalkylamines and C₂-C₄-alkoxyalkylamines, for example methylamine, ethylamine, n-propylamine, isopropylamine, the four butylamine isomers, n-amylamine, isoamylamine, hexylamine, heptylamine, octylamine, nonylamine, decylamine, pentadecylamine, hexadecylamine, heptadecylamine, octadecylamine, methyl-ethylamine, methyl-isopropylamine, methyl-hexylamine, methyl-nonylamine, methyl-pentadecylamine, methyl-octadecylamine, ethyl-butylamine, ethyl-heptylamine, ethyl-octylamine, hexyl-heptylamine, hexyl-octylamine, dimethylamine, diethylamine, di-n-propylamine, diisopropylamine, di-n-butylamine, di-n-amylamine, diisoamylamine, dihexylamine, diheptylamine, dioctylamine, ethanolamine, n-propanolamine, isopropanolamine, N,N-diethanolamine, N-ethylpropanolamine, N-butylethanolamine, allylamine, n-butenyl-2-amine, n-pentenyl-2-amine, 2,3-dimethylbutenyl-2-amine, dibutenyl-2-amine, n-hexenyl-2-amine, propylenediamine, trimethylamine, triethylamine, tri-n-propylamine, triisopropylamine, tri-n-butylamine, triisobutylamine, tri-sec-butylamine, tri-n-amylamine, methoxyethylamine and ethoxyethylamine; heterocyclic amines, for example pyridine, quinoline, isoquinoline, morpholine, piperidine, pyrrolidine, indoline, quinuclidine and azepine; primary arylamines, for example anilines, methoxyanilines, ethoxyanilines, o-, m- and p-toluidines, phenylenediamines, benzidines, naphthylamines and o-, m- and p-chloroanilines; but especially triethylamine, isopropylamine and diisopropylamine.

Preferred quaternary ammonium bases suitable for the salt formation correspond, for example, to the formula $[N(R_a R_b R_c R_d)]OH$, wherein R_a, R_b, R_c and R_d are each independently of the others C₁-C₄ alkyl. Other suitable tetraalkylammonium bases having other anions can be obtained, for example, by anion exchange reactions.

Preference is given to compounds of formula I wherein R₄ and R₅ are each independently of the other C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₄-C₆alkenyloxyalkyl, C₄-C₆alkynyloxyalkyl, C₂-C₆alkylthioalkyl, C₂-C₆alkylsulfoxylalkyl, C₂-C₆alkylsulfonylalkyl, C₂-C₆alkylcarbonylalkyl, C₃-C₆-N-alkoxy-iminoalkyl, C₃-C₆alkoxycarbonylalkyl, C₁-C₆aminoalkyl, C₂-C₆dialkylaminoalkyl, C₃-C₆alkylaminoalkyl, C₁-C₆cyanoalkyl, C₄-C₈cycloalkylalkyl, C₇-C₈phenylalkyl,

C₇-C₈heteroarylalkyl, C₇-C₈phenoxyalkyl, C₇-C₈heteroaryloxyalkyl, C₄-C₆alkylidene-aminooxyalkyl, C₁-C₆nitroalkyl, C₄-C₈trialkylsilylalkyl, C₄-C₆alkylaminocarbonyl, C₃-C₆dialkylaminocarbonyl, C₄-C₈alkylaminocarbonyloxyalkyl, C₄-C₈dialkylaminocarbonyloxalkyl, C₄-C₈-alkoxycarbonylaminoalkyl, C₄-C₈-N-alkoxycarbonyl-N-alkylaminoalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl, or

R₄ and R₅, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group.

Preference is given also to compounds of formula I wherein

R₂, R₆ and R₃₂ are each independently of the others C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₄-C₆alkenyloxyalkyl, C₄-C₆alkynyloxyalkyl, C₂-C₆alkylthioalkyl, C₂-C₆alkylsulfoxylalkyl, C₂-C₆alkylsulfonylalkyl, C₃-C₆alkylcarbonylalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl;

R₇, R₃₁ and R₃₃ are hydrogen, C₁-C₆alkyl or C₁-C₆alkoxyalkyl;

R₈ is hydrogen, C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₄-C₆alkenyloxyalkyl, C₄-C₆alkynyloxyalkyl, C₁-C₆alkylthioalkyl, C₁-C₆alkylsulfinylalkyl, C₁-C₆alkylsulfonylalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl; or

R₆ and R₇ or R₂ and R₃₁ or R₃₂ and R₃₃, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur, or

R₆ and R₈, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₉, R₁₀, R₁₁ and R₁₂ are each independently of the others C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₄-C₆alkenyloxyalkyl, C₄-C₆alkynyloxyalkyl, C₂-C₆alkylthialkyl, C₂-C₆alkylsulfinylalkyl, C₂-C₆alkylsulfonylalkyl, C₃-C₆alkylcarbonylalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl; or

R₉ and R₁₁ or R₉ and R₁₀, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur, or

R₉ and R₁₀, together with the atom to which they are bonded, form a saturated 3- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₁₃, R₁₄, R₃₄ and R₃₅ are each independently of the others C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₄-C₆alkenyloxyalkyl, C₄-C₆alkynyloxyalkyl, C₂-C₆alkylthioalkyl, C₂-C₆alkylsulfoxylalkyl, C₂-C₆alkylsulfonylalkyl, C₃-C₆alkylcarbonylalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl; or

R₁₃ and R₁₄ or R₃₄ and R₃₅, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur,

R₁₅ is C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₄-C₆alkenyloxyalkyl, C₄-C₆alkynyloxyalkyl, C₂-C₆alkylthioalkyl, C₂-C₆alkylsulfoxylalkyl, C₂-C₆alkylsulfonylalkyl, C₃-C₆alkylcarbonylalkyl, C₃-C₆alkoxycarbonylalkyl, C₂-C₆aminoalkyl, C₄-C₆dialkylaminoalkyl, C₄-C₆alkylaminoalkyl, C₂-C₆cyanoalkyl, C₃-C₈cycloalkylalkyl, C₇-C₈phenylalkyl, C₇-C₈heteroarylalkyl, C₇-C₈phenoxyalkyl, C₆-C₈heteroaryloxyalkyl, C₁-C₆nitroalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl;
R₁₆ is C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₄-C₆alkenyloxyalkyl, C₄-C₆alkynyloxyalkyl, C₂-C₆alkylthiolalkyl, C₂-C₆alkylsulfinylalkyl, C₂-C₆alkylsulfonylalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl;

R₁₇ is C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₄-C₆alkenyloxyalkyl, C₄-C₆alkynyloxyalkyl, C₂-C₆alkylthialkyl, C₂-C₆alkylsulfinylalkyl, C₂-C₆alkylsulfonylalkyl, C₃-C₆alkylcarbonylalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl;

R₁₈ is hydrogen, C₁-C₆alkyl or C₂-C₆alkoxyalkyl; or

R₁₇ and R₁₈, together with the atoms to which they are bonded, form a 3- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur,

R₁₉ and R₃₆ are each independently of the other C₁-C₆alkyl, C₁-C₆haloalkyl, phenyl or heteroaryl; or

R₁₈ and R₁₉ or R₁₈ and R₃₆, together with the atom to which they are bonded, form a saturated 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₂₀, R₂₁, R₂₂, R₂₃ and R₂₇ are each independently of the others hydrogen, C₁-C₈alkyl, C₁-C₈haloalkyl, C₁-C₈cyanoalkyl, C₁-C₈nitroalkyl, C₁-C₈aminoalkyl, C₁-C₅alkylamino-C₁-C₂alkyl, C₂-C₆dialkylamino-C₁-C₂alkyl, C₃-C₇cycloalkyl-C₁-C₂alkyl, C₂-C₈alkoxyalkyl, C₄-C₈alkenyloxyalkyl, C₄-C₈alkynyloxyalkyl, C₂-C₈alkylthioalkyl, C₁-C₂alkylsulfoxyl-C₁-C₂alkyl, C₁-C₂alkylsulfonyl-C₁-C₂alkyl, C₂-C₈alkylideneaminoxy-C₁-C₂alkyl, C₁-C₅alkylcarbonyl-C₁-C₂alkyl, C₁-C₅alkoxycarbonyl-C₁-C₂alkyl, C₁-C₅amino-carbonyl-C₁-C₂alkyl, C₂-C₈dialkylamino-carbonyl-C₁-C₂alkyl, C₁-C₅alkylcarbonylamino-C₁-C₂alkyl, C₁-C₂alkylcarbonyl-N-C₁-C₃alkyl-C₁-C₂aminoalkyl, C₃-C₆-trialkylsilyl-C₁-C₃alkyl, phenyl-C₁-C₂alkyl, heteroaryl-C₁-C₂alkyl, phenoxy-C₁-C₂alkyl, heteroaryloxy-C₁-C₂alkyl, C₂-C₅alkenyl, C₂-C₅haloalkenyl, C₃-C₈cycloalkyl, phenyl or heteroaryl;

R₂₄, R₂₅ and R₂₆ are each independently of the others hydrogen, C₁-C₈alkyl, C₁-C₈haloalkyl, C₁-C₈cyanoalkyl, C₁-C₈nitroalkyl, C₁-C₈aminoalkyl, C₁-C₅alkylamino-C₁-C₂alkyl, C₂-C₆dialkylamino-C₁-C₂alkyl, C₃-C₇cycloalkyl-C₁-C₂alkyl, C₂-C₈alkoxyalkyl, C₄-C₈alkenyloxyalkyl, C₄-C₈alkynyloxyalkyl, C₂-C₈alkylthioalkyl, C₁-C₂alkylsulfoxyl-C₁-C₂alkyl, C₁-C₂alkylsulfonyl-C₁-C₂alkyl, C₂-C₈alkylideneaminoxy-C₁-C₂alkyl, C₁-C₅alkylcarbonyl-C₁-C₂alkyl, C₁-C₅alkoxycarbonyl-C₁-C₂alkyl, C₁-C₅amino-carbonyl-C₁-C₂alkyl, C₂-C₈dialkylamino-carbonyl-C₁-C₂alkyl, C₁-C₅alkylcarbonylamino-C₁-C₂alkyl, C₁-C₂alkylcarbonyl-N-C₁-C₃alkyl-C₁-C₂aminoalkyl, C₃-C₆trialkylsilyl-C₁-C₃alkyl, phenyl-C₁-C₂alkyl, heteroaryl-C₁-C₂alkyl, phenoxy-C₁-C₂alkyl, heteroaryloxy-C₁-C₂alkyl, C₂-C₅alkenyl, C₂-C₅haloalkenyl, C₃-C₈cycloalkyl, phenyl, heteroaryl, C₁-C₆alkoxy, C₁-C₆haloalkoxy, C₁-C₃alkylamino, C₂-C₆dialkylamino, or benzyloxy or phenoxy in which the benzyl and phenyl groups may in turn be substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro; and

R₂₇ is C₁-C₈alkyl, C₁-C₈haloalkyl, C₁-C₈cyanoalkyl, C₁-C₈nitroalkyl, C₁-C₈aminoalkyl, C₁-C₅alkylamino-C₁-C₂alkyl, C₂-C₆dialkylamino-C₁-C₂alkyl, C₃-C₇cycloalkyl-C₁-C₂alkyl, C₂-C₈alkoxyalkyl, C₄-C₈alkenyloxyalkyl, C₄-C₈alkynyloxyalkyl, C₂-C₈alkylthioalkyl, C₁-C₂alkylsulfoxyl-C₁-C₂alkyl, C₁-C₂alkylsulfonyl-C₁-C₂alkyl, C₂-C₈alkylideneaminoxy-C₁-C₂alkyl, C₁-C₅alkylcarbonyl-C₁-C₂alkyl, C₁-C₅alkoxycarbonyl-C₁-C₂alkyl, C₁-C₅amino-carbonyl-C₁-C₂alkyl, C₂-C₈dialkylamino-carbonyl-C₁-C₂alkyl, C₁-C₅alkylcarbonylamino-C₁-C₂alkyl, C₁-C₂alkylcarbonyl-N-C₁-C₃alkyl-C₁-C₂aminoalkyl, C₃-C₆trialkylsilyl-C₁-C₃alkyl, phenyl-C₁-C₂alkyl, heteroaryl-C₁-C₂alkyl, phenoxy-C₁-C₂alkyl, heteroaryloxy-C₁-C₂alkyl, C₂-C₅alkenyl, C₂-C₅haloalkenyl, C₃-C₈cycloalkyl, phenyl, heteroaryl, C₁-C₆alkoxy, C₁-C₆haloalkoxy, C₁-C₈alkylcarbonyl, C₁-C₃alkylamino, C₂-C₆dialkylamino, or benzyloxy or phenoxy in which the benzyl and phenyl groups may in turn be substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro.

Special preference is given to compounds of formula I wherein

R₁ and R₃ are each independently of the other ethyl, haloethyl, ethynyl, C₁-C₂alkoxy, C₁-C₂haloalkoxy or C₁-C₂alkylcarbonyl;

R₄ and R₅ are each independently of the other C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₂-C₆alkylcarbonylalkyl, C₃-C₆alkoxycarbonylalkyl, C₁-C₆aminoalkyl, C₂-C₆dialkylaminoalkyl, C₃-C₆alkylaminoalkyl, C₁-C₆cyanoalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl; or

R₄ and R₅, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₂, R₆ and R₃₂ are each independently of the others C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl;

R₇, R₃₁ and R₃₃ are each independently of the others hydrogen, C₁-C₆alkyl or C₁-C₆alkoxyalkyl;

R₈ is hydrogen, C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₁-C₆alkylthioalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl; or

R₆ and R₇ or R₂ and R₃₁ or R₃₂ and R₃₃, together with the atom to which they are bonded, form a saturated 3- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur; or

R₆ and R₈, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₉, R₁₀, R₁₁ and R₁₂ are each independently of the others C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl; or

R₉ and R₁₁, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur; or

R₉ and R₁₀, together with the atom to which they are bonded, form a saturated 3- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₁₃, R₁₄, R₃₄ and R₃₅ are each independently of the others C₁-C₆alkyl, C₃-C₈cycloalkyl, aryl or heteroaryl; or

R₁₃ and R₁₄ or R₃₄ and R₃₅, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₁₅ is C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₄-C₆alkenyloxyalkyl, C₂-C₆alkylthioalkyl, C₂-C₆alkylsulfoxylalkyl, C₃-C₆alkoxycarbonylalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl;

R₁₆ is C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₆alkoxyalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl;

R₁₇ is C₁-C₆alkyl, C₁-C₆haloalkyl, C₃-C₈cycloalkyl, aryl or heteroaryl;

R₁₈ is hydrogen, C₁-C₆alkyl or C₂-C₆alkoxyalkyl; or

R₁₇ and R₁₈, together with the atoms to which they are bonded, form a 3- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₁₉ and R₃₆ are each independently of the other C₁-C₆alkyl or C₁-C₆haloalkyl; or

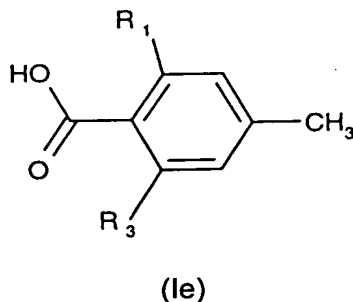
R₁₈ and R₁₉ or R₁₈ and R₃₆, together with the atom to which they are bonded, form a saturated 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R_{20} , R_{21} , R_{22} and R_{23} are each independently of the others hydrogen, C_1 - C_8 alkyl, C_1 - C_8 haloalkyl, C_3 - C_7 cycloalkyl- C_1 - C_2 alkyl, C_2 - C_8 alkoxyalkyl, phenyl- C_1 - C_2 alkyl, heteroaryl- C_1 - C_2 alkyl, phenoxy- C_1 - C_2 alkyl, heteroaryloxy- C_1 - C_2 alkyl, C_2 - C_5 alkenyl, C_2 - C_5 haloalkenyl, C_3 - C_8 cycloalkyl, phenyl or heteroaryl;

R_{24} , R_{25} and R_{26} are each independently of the others hydrogen, C_1 - C_8 alkyl, C_1 - C_8 haloalkyl, C_3 - C_7 cycloalkyl- C_1 - C_2 alkyl, C_2 - C_8 alkoxyalkyl, phenyl- C_1 - C_2 alkyl, heteroaryl- C_1 - C_2 alkyl, phenoxy- C_1 - C_2 alkyl, heteroaryloxy- C_1 - C_2 alkyl, C_2 - C_5 alkenyl, C_2 - C_5 haloalkenyl, C_3 - C_8 cycloalkyl, phenyl, heteroaryl, C_1 - C_6 alkoxy, C_1 - C_3 alkylamino or C_2 - C_6 dialkylamino; and

R_{27} is C_1 - C_8 alkyl, C_1 - C_8 haloalkyl, C_3 - C_7 cycloalkyl- C_1 - C_2 alkyl, C_2 - C_8 alkoxyalkyl, phenyl- C_1 - C_2 alkyl, heteroaryl- C_1 - C_2 alkyl, phenoxy- C_1 - C_2 alkyl, heteroaryloxy- C_1 - C_2 alkyl, C_2 - C_5 alkenyl, C_2 - C_5 haloalkenyl, C_3 - C_8 cycloalkyl, phenyl, heteroaryl, C_1 - C_6 alkoxy, C_1 - C_3 alkylamino, C_2 - C_6 dialkylamino or C_1 - C_8 alkylcarbonyl.

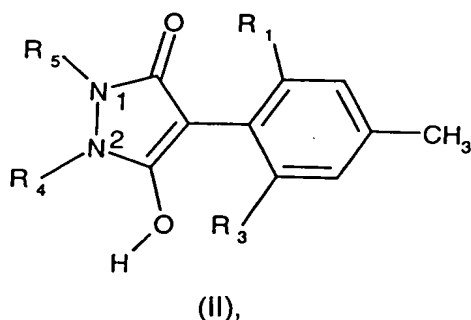
The compounds of formula I can be prepared by way of procedures known *per se*, described, for example, in WO 96/21652, by, for example, reacting a compound of formula Ie



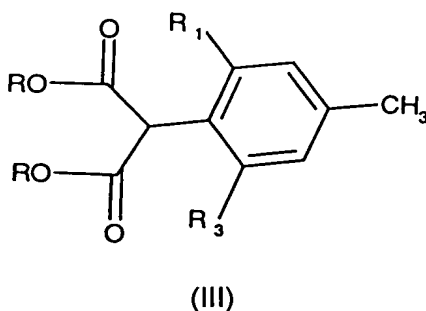
wherein R_1 and R_3 are as defined for formula I, with a compound of formula Q_1 , Q_2 , Q_3 , Q_4 , Q_5 , Q_6 , Q_7 , Q_8 or Q_9 , wherein G_1 , G_2 , G_3 , G_4 , G_5 , G_6 , G_7 , G_8 and G_9 are hydroxy and the remaining substituents are as defined for formula I, in an inert organic solvent in the presence of a base and a coupling agent, and then isomerising in the presence of a base and a catalytic amount of a cyanide source.

Or, for compounds of formula I wherein Q is Q_1 , the compounds of formula II

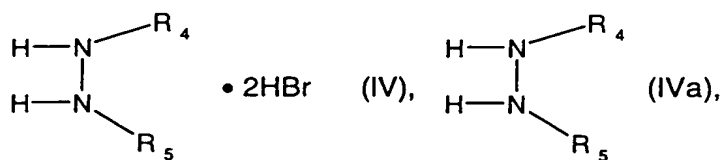
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wherein R_1 , R_3 , R_4 and R_5 have the meanings given under formula I, are used as starting materials. Those compounds can be prepared, for example, by reacting a compound of formula III

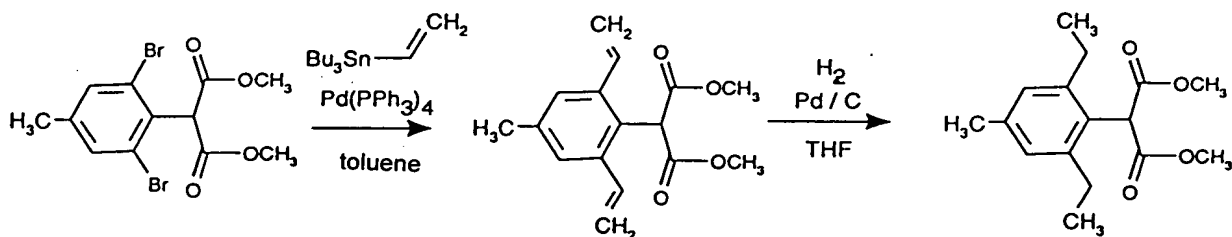


wherein R is C_1 - C_6 alkyl, C_1 - C_6 haloalkyl, preferably methyl, ethyl or trichloroethyl, and R_1 and R_3 have the meanings given under formula I, in an inert organic solvent, where necessary in the presence of a base, with a compound of formula IV or IVa



wherein R_4 and R_5 have the meanings given under formula I. Further procedures for the preparation of compounds of formula II are also described, for example, in WO 92/16510.

The compounds of formula III are either known, or they can be prepared analogously to known procedures. Procedures for the preparation of compounds of formula III and the reaction thereof with hydrazines are described, for example, in WO 97/02243. Compounds of formula III wherein R is C₁-C₆alkyl, C₁-C₆haloalkyl, preferably methyl, ethyl or trichloroethyl, and R₁ and R₃ have the meanings given under formula I, can be prepared analogously to methods known to the person skilled in the art. For example, compounds of formula III wherein R is C₁-C₆alkyl, C₁-C₆haloalkyl, preferably methyl, ethyl or trichloroethyl, and R₁ and R₃ are each independently of the other C₁-C₄alkyl, C₂-C₄alkenyl or C₂-C₄alkynyl, can be prepared in accordance with the cross-coupling procedure according to Stille (J.K. Stille, *Angew. Chem.* 1986, 98, 504-519), Sonogashira (K. Sonogashira *et al.*, *Tetrahedron Lett.* 1975, 4467-4470), Suzuki (N. Miyaura, A. Suzuki, *Chem. Rev.* 1995, 95, 2457-2483) or Heck (R.F. Heck, *Org. React.* 1982, 27, 345-390) and if necessary subsequent hydrogenation. The following reaction scheme illustrates that procedure:



The compounds of formula IV and IVa are either known, or they can be prepared analogously to known procedures. Procedures for the preparation of compounds of formula IV are described, for example, in WO 95/00521.

Compounds of formula I wherein Q is Q₂ can be prepared, for example, in accordance with the procedures described in EP-A-0 415 185, EP-A-0 521 334, EP-A-0 355 599 and EP-A-0 442 077. Compounds of formula I wherein Q is Q₃, Q₄, Q₆ or Q₇ can be prepared, for example, in accordance with the procedures described in WO 96/35644 and WO 97/02243. Compounds of formula I wherein Q is Q₅ can be prepared, for example, analogously to the procedures described in WO 97/14667. Analogous procedures for the preparation of compounds of formula I wherein Q is Q₇ are described in WO 97/16436. Compounds of formula I wherein Q is Q₉ can be prepared analogously to JP 11152273 A (priority: 19.11.1997 JP 318614).

The reactions to form compounds of formula I are advantageously carried out in aprotic, inert organic solvents. Such solvents are hydrocarbons, such as benzene, toluene, xylene or cyclohexane, chlorinated hydrocarbons, such as dichloromethane, trichloromethane, tetrachloromethane or chlorobenzene, ethers, such as diethyl ether, ethylene glycol dimethyl ether, diethylene glycol dimethyl ether, tetrahydrofuran or dioxane, nitriles, such as acetonitrile or propionitrile, and amides, such as N,N-dimethylformamide, diethylformamide or N-methylpyrrolidinone. The reaction temperatures are preferably from -20°C to +120°C. The reactions are generally slightly exothermic and can usually be carried out at room temperature. To shorten the reaction time or also to initiate the reaction, the temperature can, if desired, be increased to the boiling point of the reaction mixture for a brief period. The reaction times can also be shortened by the addition of a few drops of base as reaction catalyst. Suitable bases include especially tertiary amines, such as trimethylamine, triethylamine, quinuclidine, 1,4-diazabicyclo[2.2.2]octane, 1,5-diazabicyclo[4.3.0]non-5-ene and 1,5-diazabicyclo[5.4.0]undec-7-ene, but it is also possible to use inorganic bases, such as hydrides, for example sodium or calcium hydride, hydroxides, for example sodium or potassium hydroxide, carbonates, for example sodium or potassium carbonate, or hydrogen carbonates, for example potassium or sodium hydrogen carbonate.

The compounds of formula I can be isolated in customary manner by concentration and/or evaporation of the solvent and can be purified by recrystallisation or trituration of the solid residue in solvents in which they are not readily soluble, such as ethers, aromatic hydrocarbons or chlorinated hydrocarbons.

For the use in accordance with the invention of the compounds of formula I or of compositions comprising them, there are suitable any of the methods of application customary in agriculture, such as pre-emergence application, post-emergence application and seed dressing, and also various methods and techniques, for example the controlled release of active ingredient. In that method, the active ingredient is applied in solution to mineral granule carriers or polymerised granules (urea/formaldehyde) and dried. Where appropriate, it is also possible to apply a coating (coated granules) that allows the active ingredient to be released in metered amounts over a specific period.

The compounds of formula I can be used as herbicides in unmodified form, that is to say as obtained in the synthesis. Preferably, however, they are formulated in customary manner

using the adjuvants customarily employed in formulation technology, for example into emulsifiable concentrates, directly sprayable or dilutable solutions, dilute emulsions, wettable powders, soluble powders, dusts, granules or microcapsules. Such formulations are described, for example, in WO 97/34485 on pages 9 to 13. As with the nature of the compositions, the methods of application, such as spraying, atomising, dusting, wetting, scattering or pouring, are chosen in accordance with the intended objectives and the prevailing circumstances.

The formulations, i.e. the compositions, preparations or mixtures comprising the active ingredient of formula I or at least one active ingredient of formula I and generally one or more solid or liquid formulation adjuvants, are prepared in known manner, e.g. by intimately mixing and/or grinding the active ingredients with the formulation adjuvants, e.g. solvents or solid carriers. In addition, it is also possible for surface-active compounds (surfactants) to be used in the preparation of the formulations. Examples of solvents and solid carriers are given, for example, in WO 97/34485 on page 6.

Depending on the nature of the active ingredient of formula I to be formulated, suitable surface-active compounds are non-ionic, cationic and/or anionic surfactants and mixtures of surfactants having good emulsifying, dispersing and wetting properties. Examples of suitable anionic, non-ionic and cationic surfactants are listed, for example, on pages 7 and 8 of WO 97/34485. Also suitable for the preparation of the herbicidal compositions according to the invention are the surfactants customarily employed in formulation technology, which are described, *inter alia*, in "Mc Cutcheon's Detergents and Emulsifiers Annual" MC Publishing Corp., Ridgewood New Jersey, 1981, Stache, H., "Tensid-Taschenbuch", Carl Hanser Verlag, Munich/Vienna, 1981 and M. and J. Ash, "Encyclopedia of Surfactants", Vol I-III, Chemical Publishing Co., New York, 1980-81.

The activity of the herbicidal and plant growth-inhibiting compositions according to the invention comprising a herbicidally effective amount of compound of formula I can be increased by the addition of spray tank adjuvants.

Such adjuvants may be, for example: non-ionic surfactants, mixtures of non-ionic surfactants, mixtures of anionic surfactants with non-ionic surfactants, cationic surfactants, organosilicon surfactants, mineral oil derivatives with and without surfactants, vegetable oil derivatives with and without the addition of surfactant, alkylated derivatives of oils of vegetable or mineral

origin with and without surfactants, fish oils and other animal oils of animal nature and alkyl derivatives thereof with and without surfactants, naturally occurring higher fatty acids, preferably having from 8 to 28 carbon atoms, and alkyl ester derivatives thereof, organic acids containing an aromatic ring system and one or more carboxylic acid esters, and alkyl derivatives thereof, and also suspensions of polymers of vinyl acetate or of copolymers of vinyl acetate/acrylic acid esters. Mixtures of individual adjuvants with one another and combined with organic solvents may lead to the activity being further increased.

Suitable non-ionic surfactants include, for example, polyglycol ether derivatives of aliphatic or cycloaliphatic alcohols, of saturated or unsaturated fatty acids and alkylphenols, preferably that can contain from 3 to 30 glycol ether groups and from 8 to 20 carbon atoms in the (aliphatic) hydrocarbon radical and from 6 to 18 carbon atoms in the alkyl radical of the alkylphenols.

Further suitable non-ionic surfactants are the water-soluble polyethylene oxide adducts of polypropylene glycol, ethylenediaminopolypropylene glycol and alkyl polypropylene glycol having preferably from 1 to 10 carbon atoms in the alkyl chain, which adducts contain preferably from 20 to 250 ethylene glycol ether groups and from 10 to 100 propylene glycol ether groups. The said compounds usually contain from 1 to 5 ethylene glycol units per propylene glycol unit.

There may also be mentioned, as further examples of non-ionic surfactants, nonylphenol polyethoxyethanols, castor oil polyglycol ethers, polypropylene/polyethylene oxide adducts, tributylphenoxypolyethoxyethanol, polyethylene glycol and octylphenoxypolyethoxyethanol.

Fatty acid esters of polyoxyethylenesorbitan, e.g. polyoxyethylenesorbitan trioleate, are also suitable.

Preferred anionic surfactants are especially alkyl sulfates, alkyl sulfonates, alkylaryl sulfonates, alkylated phosphoric acids, and ethoxylated derivatives thereof. The alkyl radicals usually contain from 8 to 24 carbon atoms.

Preferred non-ionic surfactants are known by the following trade names:

polyoxyethylene cocoalkylamine (e.g. AMIET[®] 105 (Kao Co.)), polyoxyethylene oleylamine (e.g. AMIET[®] 415 (Kao Co.)), nonylphenol polyethoxyethanols, polyoxyethylene stearylamine (e.g. AMIET[®] 320 (Kao Co.)), N-polyethoxyethylamines (e.g. GENAMIN[®] (Hoechst AG)), N,N,N',N'-tetra(polyethoxypolypropoxyethyl)ethylene-diamine (e.g. TERRONIL[®] and TETRONIC[®] (BASF Wyandotte Corp.)), BRIJ[®] (Atlas Chemicals), ETHYLAN[®] CD and ETHYLAN[®] D (Diamond Shamrock), GENAPOL[®] C, GENAPOL[®] O, GENAPOL[®] S and GENAPOL[®] X080 (Hoechst AG), EMULGEN[®] 104P, EMULGEN[®] 109P and EMULGEN[®] 408 (Kao Co.); DISTY[®] 125 (Geronazzo), SOPROPHOR[®] CY 18 (Rhone Poulenc S.A.); NONISOL[®] (Ciba-Geigy), MRYJ[®] (ICI); TWEEN[®] (ICI); EMULSOGEN[®] (Hoechst AG); AMIDOX[®] (Stephan Chemical Co.), ETHOMID[®] (Armak Co.); PLURONIC[®] (BASF Wyandotte Corp.), SOPROPHOR[®] 461P (Rhône Poulenc S.A.), SOPROPHOR[®] 496/P (Rhone Poulenc S.A.), ANTAROX FM-63 (Rhone Poulenc S.A.), SLYGARD 309 (Dow Corning), SILWET 408, SILWET L-7607N (Osi-Specialities).

The cationic surfactants are especially quaternary ammonium salts that contain as N-substituent(s) at least one alkyl radical having from 8 to 22 carbon atoms and, as further substituents, optionally halogenated lower alkyl, benzyl or hydroxy-lower alkyl radicals. The salts are preferably in the form of halides, methyl sulfates or ethyl sulfates, for example stearyltrimethylammonium chloride or benzyldi(2-chloroethyl)ethylammonium bromide.

The oils used are either of mineral or natural origin. The natural oils can in addition be of animal or vegetable origin. Of the animal oils preference is given especially to derivatives of beef tallow, but fish oils (e.g. sardine oil) and derivatives thereof are also used. Vegetable oils are mostly seed oils of varied origin. Examples of vegetable oils used especially that may be mentioned include coconut oil, rapeseed oil and sunflower oil and derivatives thereof.

In the composition according to the invention, the concentrations of oil additive are generally from 0.01 to 2 %, based on the spray mixture. The oil additive can, for example, be added to the spray tank in the desired concentration after the spray mixture has been prepared.

Preferred oil additives in the composition according to the invention comprise an oil of vegetable origin, for example rapeseed oil or sunflower oil, alkyl esters of oils of vegetable origin, for example methyl derivatives, or mineral oils.

Especially preferred oil additives comprise alkyl esters of higher fatty acids (C_8 - C_{22}), especially the methyl derivatives of C_{12} - C_{18} fatty acids, for example the methyl esters of lauric acid, palmitic acid and oleic acid. Those esters are known as methyl laurate (CAS-111-82-0), methyl palmitate (CAS-112-39-0) and methyl oleate (CAS-112-62-9).

The application and action of the oil additives can be improved by combining them with surface-active substances, such as non-ionic, anionic or cationic surfactants. Examples of suitable anionic, non-ionic and cationic surfactants are listed in WO 97/34485 on pages 7 and 8.

Preferred surface-active substances are anionic surfactants of the dodecylbenzylsulfonate type, especially the calcium salts thereof, and also non-ionic surfactants of the fatty alcohol ethoxylate type. Special preference is given to ethoxylated C_{12} - C_{22} fatty alcohols having a degree of ethoxylation of from 5 to 40. Examples of commercially available preferred surfactants are the Genapol types (Clariant AG, Muttenz, Switzerland).

The concentration of the surface-active substances in relation to the total additive is generally from 1 to 30 % by weight.

Examples of oil additives consisting of mixtures of oils or mineral oils or derivatives thereof with surfactants include Edenor ME SU®, Emery 2231® (Henkel subsidiary Cognis GMBH, DE), Turbocharge® (Zeneca Agro, Stoney Creek, Ontario, CA) or, more especially, Actipron® (BP Oil UK Limited, GB).

The addition of an organic solvent to the oil additive/surfactant mixture can, furthermore, bring about a further increase in activity. Suitable solvents include, for example, Solvesso® (ESSO) and Aromatic Solvent® (Exxon Corporation) types.

The concentration of such solvents can be from 10 to 80 %, by weight, of the total weight.

Such oil additives, which, for example, are also described in US-A-4 834 908, are especially preferred for the composition according to the invention. A more especially preferred oil additive is known by the name MERGE®, can be obtained from BASF Corporation and is basically described, for example, in US-A-4 834 908, col. 5, as Example COC-1. A further oil

additive that is preferred in accordance with the invention is SCORE® (Novartis Crop Protection Canada).

Surfactants, oils, especially vegetable oils, derivatives thereof, such as alkylated fatty acids and mixtures thereof, for example with preferably anionic surfactants, such as alkylated phosphoric acids, alkyl sulfates and alkylaryl sulfonates and also higher fatty acids, that are customary in formulation and adjuvant technology and that can also be used in the compositions according to the invention and in spray tank solutions thereof, are described, *inter alia*, in "Mc Cutcheon's Detergents and Emulsifiers Annual" MC Publishing Corp., Ridgewood New Jersey, 1998, Stache, H., "Tensid-Taschenbuch", Carl Hanser Verlag, Munich/Vienna, 1990, M. and J. Ash, "Encyclopedia of Surfactants", Vol I-IV, Chemical Publishing Co., New York, 1981-89, G. Kapusta, "A Compendium of Herbicide Adjuvants", Southern Illinois Univ., 1998, L. Thomson Harvey, "A Guide to Agricultural Spray Adjuvants Used in the United States", Thomson Pubns., 1992.

The herbicidal formulations generally contain from 0.1 to 99 % by weight, especially from 0.1 to 95 % by weight, of herbicide, from 1 to 99.9 % by weight, especially from 5 to 99.8 % by weight, of a solid or liquid formulation adjuvant, and from 0 to 25 % by weight, especially from 0.1 to 25 % by weight, of a surfactant. Whereas commercial products will preferably be formulated as concentrates, the end user will normally employ dilute formulations. The compositions may also comprise further ingredients, such as stabilisers, for example vegetable oils or epoxidised vegetable oils (epoxidised coconut oil, rapeseed oil or soybean oil), anti-foams, for example silicone oil, preservatives, viscosity regulators, binders, tackifiers and also fertilisers or other active ingredients.

The active ingredients of formula I are generally used on the plants or the locus thereof at rates of application of from 0.001 to 4 kg/ha, especially from 0.005 to 2 kg/ha. The concentration required to achieve the desired effect can be determined by experiment. It is dependent on the type of action, the development stage of the crop plant and of the weed and on the application (place, time, method) and, in dependence on those parameters, can vary within wide ranges.

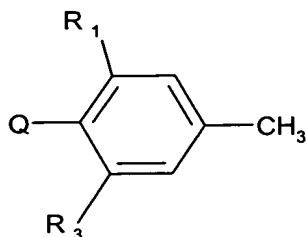
The compounds of formula I are distinguished by herbicidal and growth-inhibiting properties that make them suitable for use in crops of useful plants, especially in cereals, cotton,

soybeans, sugar beet, sugar cane, plantation crops, rape, maize and rice, and for non-selective weed control. Crops are also to be understood as including those that have been rendered tolerant to herbicides or classes of herbicides by conventional breeding or genetic engineering methods. The weeds to be controlled may be either monocotyledonous or dicotyledonous weeds, for example *Stellaria*, *Nasturtium*, *Agrostis*, *Digitaria*, *Avena*, *Setaria*, *Sinapis*, *Lolium*, *Solanum*, *Echinochloa*, *Scirpus*, *Monochoria*, *Sagittaria*, *Bromus*, *Alopecurus*, *Sorghum halepense*, *Rottboellia*, *Cyperus*, *Abutilon*, *Sida*, *Xanthium*, *Amaranthus*, *Chenopodium*, *Ipomoea*, *Chrysanthemum*, *Galium*, *Viola* and *Veronica*.

Surprisingly, it has been shown that special safeners, known from US-A-5 041 157, US-A-5 541 148, US-A-5 006 656, EP-A-0 094 349, EP-A-0 551 650, EP-A-0 268 554, EP-A-0 375 061, EP-A-0 174 562, EP-A-492 366, WO 91/7874, WO 94/987, DE-A-19612943, WO 96/29870, WO 98/13361, WO 98/39297, WO 98/27049, EP-A-0 716 073, EP-A-0 613 618, US-A-5 597 776 and EP-A-0 430 004, are suitable for mixing with the herbicidal compositions according to the invention. The present invention accordingly relates also to a selective-herbicidal composition for controlling grasses and weeds in crops of useful plants, especially in crops of maize and cereals, which composition comprises a herbicide of formula I and a safener (antidote) and protects the useful plants, but not the weeds, against the phytotoxic action of the herbicide, and to the use of such a composition in the control of weeds in crops of useful plants.

There is thus proposed, in accordance with the invention, a selective-herbicidal composition that comprises as active ingredient, in addition to customary inert formulation adjuvants, such as carriers, solvents and wetting agents, a mixture of

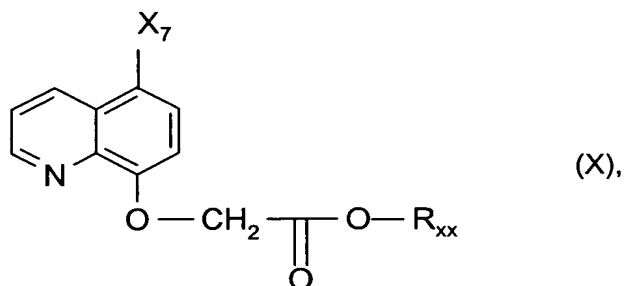
a) a herbicidally effective amount of a compound of formula I



(I),

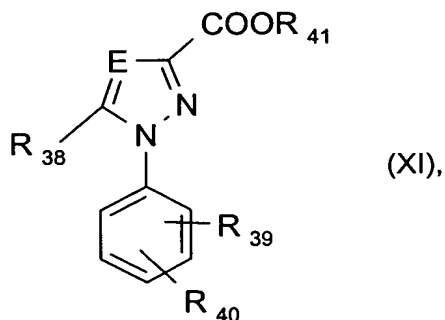
wherein R₁, R₃ and Q are as defined hereinabove, with the proviso that Q is other than Q₁;
and

b) a herbicide-antagonistically effective amount either of a compound of formula X



wherein

R_{xx} is hydrogen, C_1 - C_8 alkyl, or C_1 - C_8 alkyl substituted by C_1 - C_6 alkoxy or by C_3 - C_6 alkenyloxy;
and X_7 is hydrogen or chlorine; or of a compound of formula XI

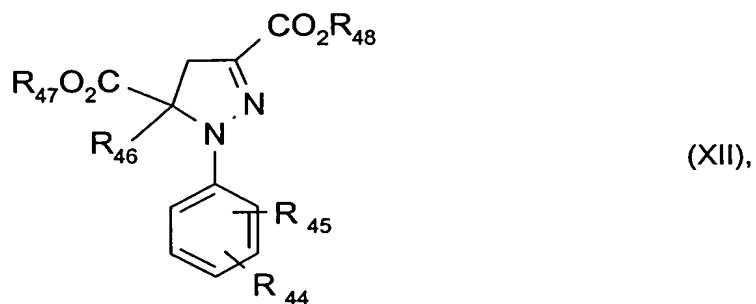


wherein E is nitrogen or methine;

R_{38} is $-CCl_3$, phenyl or phenyl substituted by halogen;

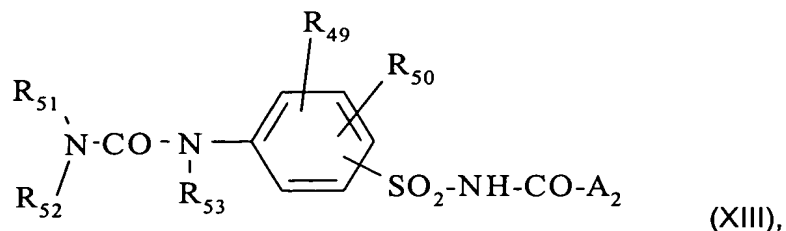
R_{39} and R_{40} are each independently of the other hydrogen or halogen; and

R_{41} is C_1 - C_4 alkyl; or of a compound of formula XII

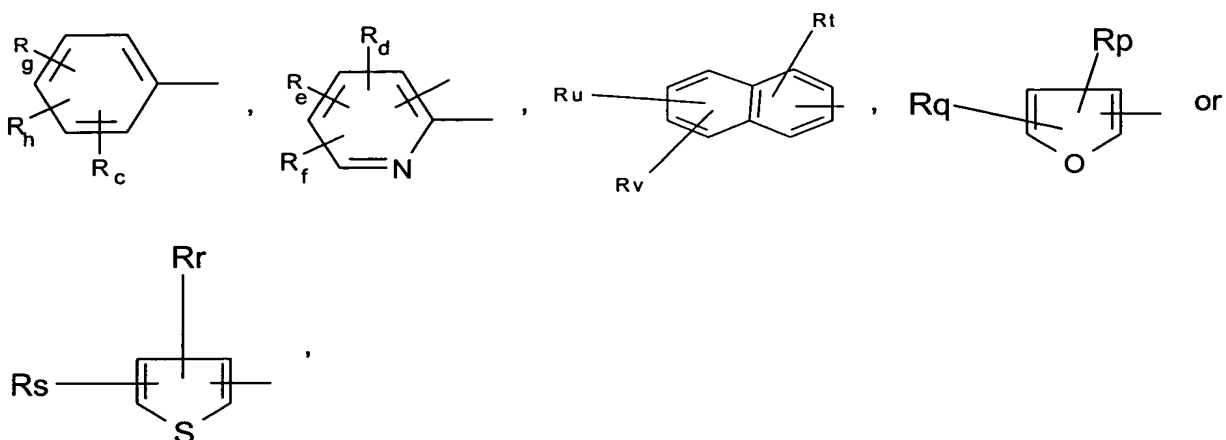


wherein R_{44} and R_{45} are each independently of the other hydrogen or halogen, and

R_{46} , R_{47} and R_{48} are each independently of the others C_1 - C_4 alkyl, or of a compound of formula XIII



wherein A_2 is a group



R_{51} and R_{52} are each independently of the other hydrogen, C_1 - C_8 alkyl, C_3 - C_8 cycloalkyl,

C_3 - C_6 alkenyl, C_3 - C_6 alkynyl, , or C_1 - C_4 alkyl substituted by C_1 - C_4 alkoxy

or by ; or R_{51} and R_{52} together form a C_4 - C_6 alkylene bridge that may be

interrupted by oxygen, sulfur, SO, SO_2 , NH or by $-N(C_1-C_4\text{alkyl})-$;

R_{53} is hydrogen or C_1 - C_4 alkyl;

R_{49} is hydrogen, halogen, cyano, trifluoromethyl, nitro, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, $-COOR_j$, $-CONR_kR_m$, $-COR_n$, $-SO_2NR_kR_m$ or $-OSO_2-C_1-C_4$ alkyl;

R_g is hydrogen, halogen, cyano, nitro, C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkylthio, C_1 - C_4 alkylsulfinyl, C_1 - C_4 alkylsulfonyl, $-COOR_j$, $-CONR_kR_m$, $-COR_n$, $-SO_2NR_kR_m$, $-OSO_2-C_1-C_4$ alkyl, C_1 - C_6 alkoxy, or C_1 - C_6 alkoxy substituted by C_1 - C_4 alkoxy or by halogen, C_3 - C_6 alkenyloxy, or C_3 - C_6 alkynyloxy substituted by halogen, or R_{49} and R_{50} together form a

C₃-C₄alkylene bridge that may be substituted by halogen or by C₁-C₄alkyl, or together form a C₃-C₄alkenylene bridge that may be substituted by halogen or by C₁-C₄alkyl, or together form a C₄alkadienylene bridge that may be substituted by halogen or by C₁-C₄alkyl;

R₅₀ and R_n are each independently of the other hydrogen, halogen, C₁-C₄alkyl, trifluoromethyl, C₁-C₆alkoxy, C₁-C₆alkylthio or -COOR_j;

R_c is hydrogen, halogen, nitro, C₁-C₄alkyl or methoxy; R_d is hydrogen, halogen, nitro, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, -COOR_j or CONR_kR_m;

R_e is hydrogen, halogen, C₁-C₄alkyl, -COOR_j, trifluoromethyl or methoxy, or R_d and R_e together form a C₃-C₄alkylene bridge;

R_p is hydrogen, halogen, C₁-C₄alkyl, -COOR_j, trifluoromethyl or methoxy; R_q is hydrogen, halogen, nitro, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, -COOR_j or CONR_kR_m; or R_p and R_q together form a C₃-C₄alkylene bridge;

R_r is hydrogen, halogen, C₁-C₄alkyl, -COOR_j, trifluoromethyl or methoxy; R_s is hydrogen, halogen, nitro, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, -COOR_j or CONR_kR_m; or R_r and R_s together form a C₃-C₄alkylene bridge;

R_t is hydrogen, halogen, C₁-C₄alkyl, -COOR_j, trifluoromethyl or methoxy; R_u is hydrogen, halogen, nitro, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, -COOR_j or CONR_kR_m; , or R_v and R_u together form a C₃-C₄alkylene bridge;

R_f and R_v are hydrogen, halogen or C₁-C₄alkyl;

R_x and R_y are each independently of the other hydrogen, halogen, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, -COOR₅₄, trifluoromethyl, nitro or cyano;

R_j, R_k and R_m are each independently of the others hydrogen or C₁-C₄alkyl; or

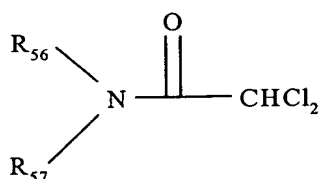
R_k and R_m together form a C₄-C₆alkylene bridge that may be interrupted by oxygen, NH or by -N(C₁-C₄alkyl)-;

R_n is C₁-C₄alkyl, phenyl, or phenyl substituted by halogen, C₁-C₄alkyl, methoxy, nitro or by trifluoromethyl;

R₅₄ is hydrogen, C₁-C₁₀alkyl, C₁-C₄alkoxy-C₁-C₄alkyl, C₁-C₄alkylthio-C₁-C₄alkyl, di-C₁-C₄-alkylamino-C₁-C₄alkyl, halo-C₁-C₈alkyl, C₂-C₈alkenyl, halo-C₂-C₈alkenyl, C₃-C₈alkynyl, C₃-C₇cycloalkyl, halo-C₃-C₇cycloalkyl, C₁-C₈alkylcarbonyl, allylcarbonyl, C₃-C₇cycloalkylcarbonyl, benzoyl, which is unsubstituted or substituted on the phenyl ring identically or differently up to three times by halogen, C₁-C₄alkyl, halo-C₁-C₄alkyl, halo-C₁-C₄alkoxy or C₁-C₄alkoxy; or furoyl, thienyl; or C₁-C₄alkyl substituted by phenyl, halophenyl, C₁-C₄alkylphenyl, C₁-C₄alkoxyphenyl, halo-C₁-C₄alkylphenyl, halo-C₁-C₄alkoxyphenyl, C₁-C₆alkoxy-

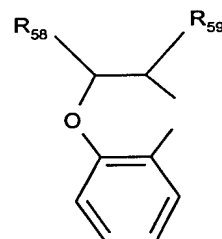
carbonyl, C₁-C₄alkoxy-C₁-C₈alkoxycarbonyl, C₃-C₈alkenyloxycarbonyl, C₃-C₈alkynyloxy-carbonyl, C₁-C₈alkylthiocarbonyl, C₃-C₈alkenylthiocarbonyl, C₃-C₈alkynylthiocarbonyl, carbamoyl, mono-C₁-C₄alkylaminocarbonyl, di-C₁-C₄alkylaminocarbonyl; or phenylamino-carbonyl, which is unsubstituted or substituted on the phenyl identically or differently up to three times by halogen, C₁-C₄alkyl, halo-C₁-C₄alkyl, halo-C₁-C₄alkoxy or C₁-C₄alkoxy or once by cyano or nitro; or dioxolan-2-yl, which is unsubstituted or substituted by one or two C₁-C₄-alkyl radicals, or dioxan-2-yl, which is unsubstituted or substituted by one or two C₁-C₄alkyl radicals, or C₁-C₄alkyl substituted by cyano, nitro, carboxyl or by C₁-C₈alkylthio-C₁-C₈alkoxy-carbonyl;

or of a compound of formula XIV



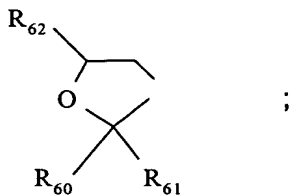
(XIV), wherein R₅₆ and R₅₇ are each independently of

the other C₁-C₆alkyl or C₂-C₆alkenyl; or R₅₆ and R₅₇ together are



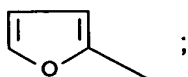
; R₅₈ and

R₅₉ are each independently of the other hydrogen or C₁-C₆alkyl; or R₅₆ and R₅₇ together are

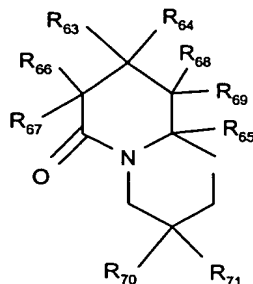


R₆₀ and R₆₁ are each independently of the other C₁-C₄alkyl, or R₆₀ and R₆₁ together are -(CH₂)₅;

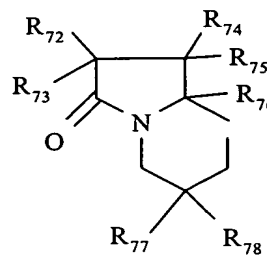
R₆₂ is hydrogen, C₁-C₄alkyl or



or R_{56} and R_{57} together are

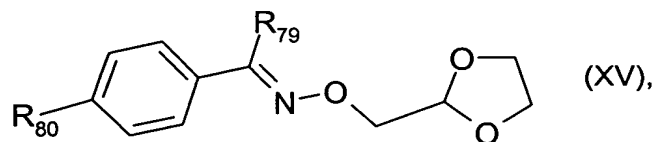


or

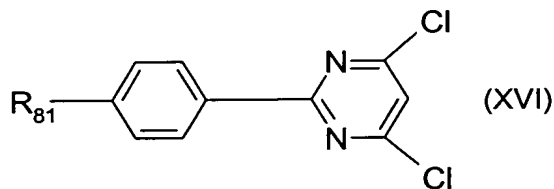


;

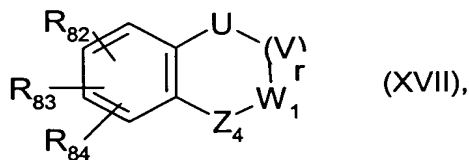
R_{63} , R_{64} , R_{65} , R_{66} , R_{67} , R_{68} , R_{69} , R_{70} , R_{71} , R_{72} , R_{73} , R_{74} , R_{75} , R_{76} , R_{77} and R_{78} are each independently of the others hydrogen or C_1 - C_4 alkyl;
or of a compound of formula XV



wherein R_{80} is hydrogen or chlorine and R_{79} is cyano or trifluoromethyl;
or a compound of formula XVI



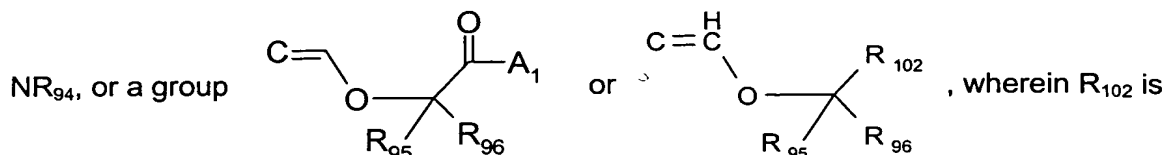
wherein R_{81} is hydrogen or methyl;
or of formula XVII



wherein

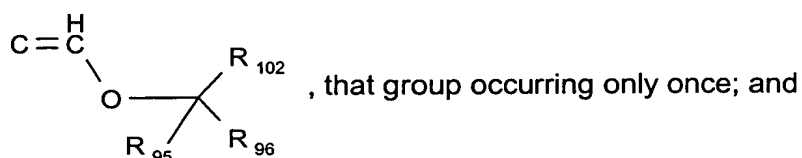
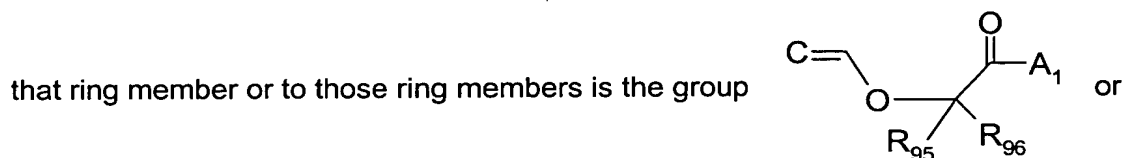
R_{82} is hydrogen, C_1 - C_4 alkyl, C_1 - C_4 alkyl substituted by C_1 - C_4 alkyl- X_{2-} or by C_1 - C_4 haloalkyl- X_{2-} ,
 C_1 - C_4 haloalkyl, nitro, cyano, $-COOR_{85}$, $-NR_{86}R_{87}$, $-SO_2NR_{88}R_{89}$ or $-CONR_{90}R_{91}$;
 R_{83} is hydrogen, halogen, C_1 - C_4 alkyl, trifluoromethyl, C_1 - C_4 alkoxy or C_1 - C_4 haloalkoxy;
 R_{84} is hydrogen, halogen or C_1 - C_4 alkyl;

U, V, W₁ and Z₄ are each independently of the others oxygen, sulfur, C(R₉₂)R₉₃, carbonyl,



C₂-C₄alkenyl or C₂-C₄alkynyl; with the provisos that

a) at least one of the ring members U, V, W₁ or Z₄ is carbonyl, and a ring member adjacent to



b) two adjacent ring members U and V, V and W₁ and W₁ and Z₄ cannot simultaneously be oxygen;

R₉₅ and R₉₆ are each independently of the other hydrogen or C₁-C₈alkyl; or

R₉₅ and R₉₆ together form a C₂-C₆alkylene group;

A₁ is R₉₉-Y₁- or -NR₉₇R₉₈;

X₂ is oxygen or -S(O)_s;

Y₁ is oxygen or sulfur;

R₉₉ is hydrogen, C₁-C₈alkyl, C₁-C₈haloalkyl, C₁-C₄alkoxy-C₁-C₈alkyl, C₃-C₆alkenyloxy-C₁-C₈alkyl, or phenyl-C₁-C₈alkyl in which the phenyl ring may be substituted by halogen, C₁-C₄alkyl, trifluoromethyl, methoxy or by methyl-S(O)_s-, or is C₃-C₆alkenyl, C₃-C₆haloalkenyl, phenyl-C₃-C₆alkenyl, C₃-C₆alkynyl, phenyl-C₃-C₆alkynyl, oxetanyl, furyl or tetrahydrofuryl;

R₈₅ is hydrogen or C₁-C₄alkyl;

R₈₆ is hydrogen, C₁-C₄alkyl or C₁-C₄alkylcarbonyl;

R₈₇ is hydrogen or C₁-C₄alkyl; or

R₈₆ and R₈₇ together form a C₄- or C₅-alkylene group;

R₈₈, R₈₉, R₉₀ and R₉₁ are each independently of the others hydrogen or C₁-C₄alkyl; or R₈₈ together with R₈₉, or R₉₀ together with R₉₁, are each independently of the other C₄- or C₅-

alkylene in which one carbon atom may have been replaced by oxygen or by sulfur, or one or two carbon atoms may have been replaced by $-NR_{100}-$;

R_{92} , R_{100} and R_{93} are each independently of the others hydrogen or C_1 - C_8 alkyl; or

R_{92} and R_{93} together are C_2 - C_6 alkylene;

R_{94} is hydrogen or C_1 - C_8 alkyl;

R_{97} is hydrogen, C_1 - C_8 alkyl, phenyl or phenyl- C_1 - C_8 alkyl, wherein the phenyl rings may be substituted by fluorine, chlorine, bromine, nitro, cyano, $-OCH_3$, C_1 - C_4 alkyl or by CH_3SO_2- , or is C_1 - C_4 alkoxy- C_1 - C_8 alkyl, C_3 - C_6 alkenyl or C_3 - C_6 alkynyl;

R_{98} is hydrogen, C_1 - C_8 alkyl, C_3 - C_6 alkenyl or C_3 - C_6 alkynyl; or

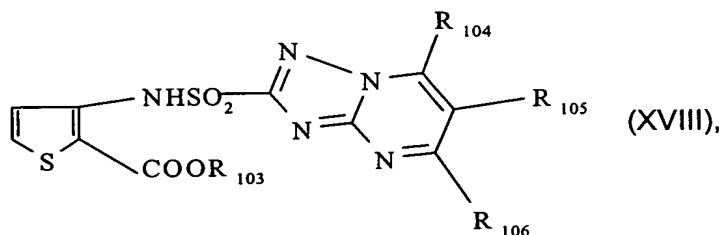
R_{97} and R_{98} together are C_4 - or C_5 -alkylene in which one carbon atom may have been replaced by oxygen or by sulfur, or one or two carbon atoms may have been replaced by $-NR_{101}-$;

R_{101} is hydrogen or C_1 - C_4 alkyl;

r is 0 or 1; and

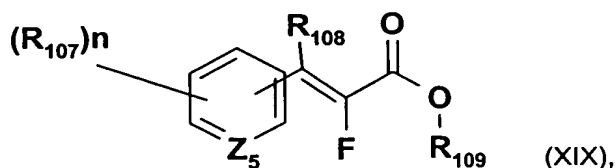
s is 0, 1 or 2,

a compound of formula XVIII



wherein R_{103} is hydrogen, C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl, C_3 - C_6 alkenyl or C_3 - C_6 alkynyl; and R_{104} , R_{105} and R_{106} are each independently of the others hydrogen, C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl or C_1 - C_6 alkoxy, with the proviso that one of the substituents R_{104} , R_{105} and R_{106} is other than hydrogen;

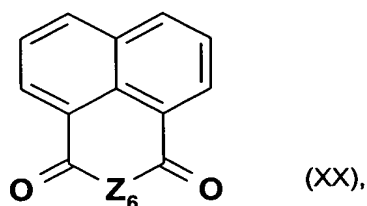
a compound of formula XIX



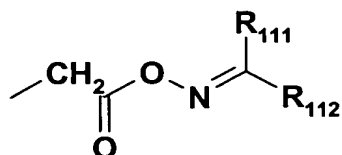
wherein Z_5 is N or CH, n is 0, 1, 2 or 3 when Z_5 is N, and n is 0, 1, 2, 3 or 4 when Z_5 is CH, R_{107} is halogen, C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkoxy, C_1 - C_4 haloalkoxy, nitro, C_1 - C_4 alkylthio, C_1 - C_4 alkylsulfonyl, C_1 - C_4 alkoxycarbonyl, phenyl or phenoxy, or phenyl or phenoxy substituted by C_1 - C_3 alkyl, C_1 - C_3 haloalkyl, C_1 - C_3 alkoxy, C_1 - C_3 haloalkoxy, halogen, cyano or by nitro,

R_{108} is hydrogen or C_1 - C_4 alkyl, R_{109} is hydrogen, C_1 - C_4 alkyl, C_3 - C_6 cycloalkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_1 - C_4 haloalkyl, C_2 - C_6 haloalkenyl, C_2 - C_6 haloalkynyl, C_1 - C_4 alkylthio- C_1 - C_4 alkyl, C_1 - C_4 alkylsulfonyl- C_1 - C_4 alkyl, C_1 - C_4 alkoxy- C_1 - C_4 alkyl, C_1 - C_4 alkenyloxy- C_1 - C_4 alkyl or C_1 - C_4 alkynyloxy- C_1 - C_4 alkyl;

a compound of formula XX

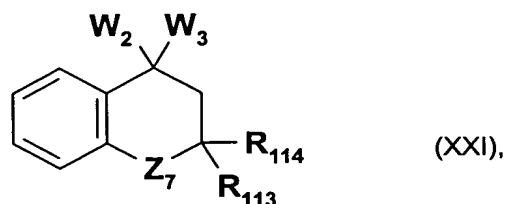


wherein Z_6 is oxygen or N- R_{110} and R_{110} is a group of formula



wherein R_{111} and R_{112} are each independently of the other cyano, hydrogen, C_1 - C_4 alkyl, C_3 - C_6 cycloalkyl, C_2 - C_6 alkenyl, aryl, phenyl or heteroaryl, or phenyl, aryl or heteroaryl substituted by C_1 - C_3 alkyl, C_1 - C_3 haloalkyl, C_1 - C_3 alkoxy, C_1 - C_3 haloalkoxy, halogen, cyano or by nitro;

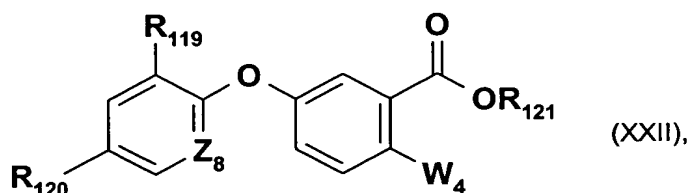
a compound of formula XXI



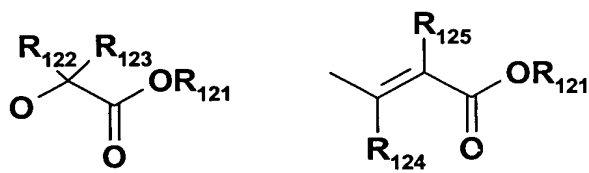
wherein Z_7 is oxygen, sulfur, S=O, SO_2 or CH_2 , R_{113} and R_{114} are each independently of the other hydrogen, halogen or C_1 - C_4 alkyl, W_2 and W_3 are each independently of the other CH_2COOR_{115} or $COOR_{0115}$ or together are a group of formula $-(CH_2)C(O)-O-C(O)-(CH_2)-$, and

R_{115} and R_{0115} are each independently of the other hydrogen, C_1 - C_4 alkyl, C_2 - C_4 alkenyl, C_2 - C_6 alkynyl, C_3 - C_6 cycloalkyl, C_1 - C_4 haloalkyl, or a metal cation or an ammonium cation;

a compound of formula XXII

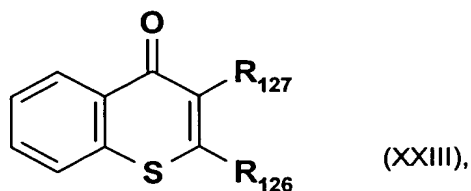


wherein R_{119} and R_{120} are each independently of the other hydrogen, halogen or C_1 - C_4 haloalkyl, R_{121} is hydrogen, C_1 - C_4 alkyl, C_3 - C_4 alkenyl, C_3 - C_4 alkynyl, C_1 - C_4 haloalkyl, C_3 - C_6 cycloalkyl, a metal cation or an ammonium cation, Z_8 is N, CH, C-F or C-Cl and W_4 is a group of formula



wherein R_{122} and R_{123} are each independently of the other hydrogen or C_1 - C_4 alkyl and R_{124} and R_{125} are each independently of the other hydrogen or C_1 - C_4 alkyl;

a compound of formula XXIII

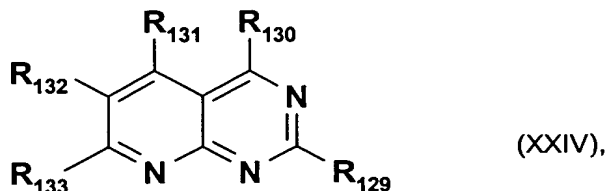


wherein R_{126} is hydrogen, cyano, halogen, C_1 - C_4 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkoxycarbonyl, C_1 - C_4 alkylthiocarbonyl, $-NH-R_{128}$, $-C(O)NH-R_{0128}$, aryl or heteroaryl, or aryl or heteroaryl substituted by C_1 - C_3 alkyl, C_1 - C_3 haloalkyl, C_1 - C_3 alkoxy, C_1 - C_3 haloalkoxy, halogen, cyano or by nitro,

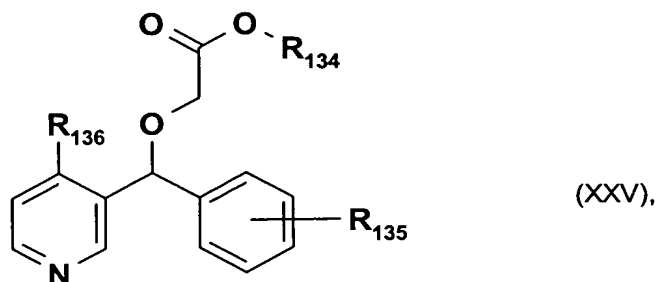
R_{127} is hydrogen, cyano, nitro, halogen, C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkoxy or C_1 - C_4 thioalkyl, and

R_{128} and R_{0128} are each independently of the other C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_3 - C_4 alkenyl, C_3 - C_4 alkynyl, C_3 - C_4 cycloalkyl, aryl or heteroaryl, or aryl or heteroaryl substituted by C_1 - C_3 -

alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, formyl, C₁-C₄alkylcarbonyl or C₁-C₄alkylsulfonyl;
a compound of formula XXIV

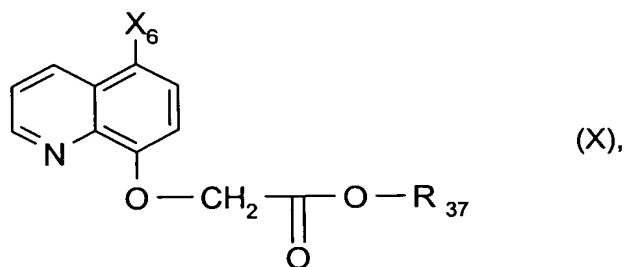


wherein R₁₂₉ and R₁₃₀ are each independently of the other hydrogen, C₁-C₄alkyl, C₁-C₄haloalkyl, C₁-C₄alkoxy, mono-C₁-C₈- or di-C₁-C₈-alkylamino, C₃-C₆cycloalkyl, C₁-C₄thioalkyl, phenyl or heteroaryl, R₁₃₁ has the meanings of R₁₂₉ and in addition is OH, NH₂, halogen, di-C₁-C₄aminoalkyl, C₁-C₄alkylthio, C₁-C₄alkylsulfonyl or C₁-C₄alkoxycarbonyl, R₁₃₂ has the meanings of R₁₂₉ and in addition is cyano, nitro, carboxyl, C₁-C₄alkoxycarbonyl, di-C₁-C₄-aminoalkyl, C₁-C₄alkylthio, C₁-C₄alkylsulfonyl, SO₂-OH, i-C₁-C₄aminoalkylsulfonyl or C₁-C₄-alkoxysulfonyl, R₁₃₃ has the meanings of R₁₂₉ and in addition is OH, NH₂, halogen, di-C₁-C₄-aminoalkyl, pyrrolidin-1-yl, piperidin-1-yl, morpholin-1-yl, C₁-C₄alkylthio, C₁-C₄alkylsulfonyl, C₁-C₄alkoxycarbonyl, phenoxy, naphthoxy, phenylamino, benzoyloxy or phenylsulfonyloxy;
or a compound of formula XXV

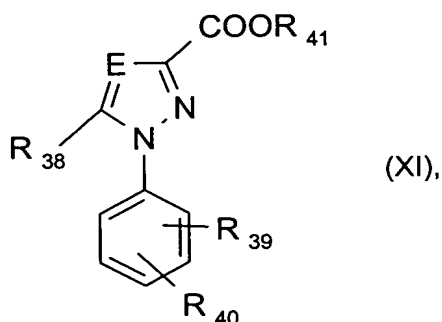


wherein R₁₃₄ is hydrogen, C₄alkyl, C₁-C₄haloalkyl, C₂-C₄alkenyl, C₂-C₄alkynyl or C₁-C₄alkoxy-C₁-C₄alkyl, R₁₃₅ is hydrogen, halogen, C₁-C₄alkyl, C₁-C₄haloalkyl or C₁-C₄alkoxy and R₁₃₆ is hydrogen, halogen, C₁-C₄alkyl, C₁-C₄haloalkyl or C₁-C₄alkoxy, with the proviso that R₁₃₅ and R₁₃₆ are not simultaneously hydrogen.

Preferably, the selective-herbicidal composition according to the invention comprises, in herbicide-antagonistically effective amount, either a compound of formula X

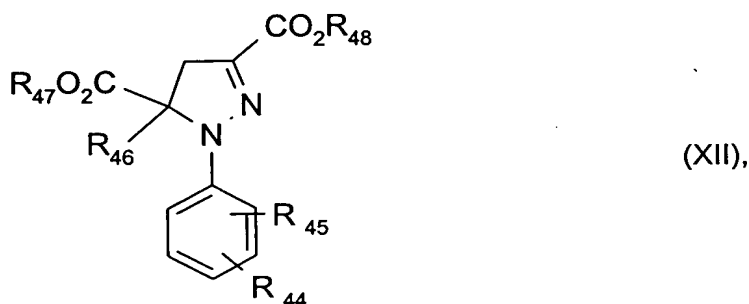


wherein R_{37} is hydrogen, C_1 - C_8 alkyl, or C_1 - C_8 alkyl substituted by C_1 - C_6 alkoxy or by C_3 - C_6 -alkenyloxy; and X_6 is hydrogen or chlorine ; or a compound of formula XI



wherein

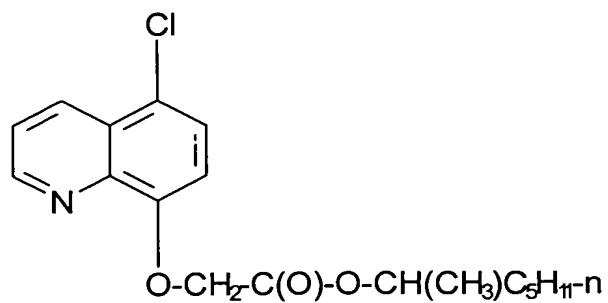
E is nitrogen or methine; R_{38} is $-CCl_3$, phenyl, or phenyl substituted by halogen; R_{39} and R_{40} are each independently of the other hydrogen or halogen; and R_{41} is C_1 - C_4 alkyl; or a compound of formula XII



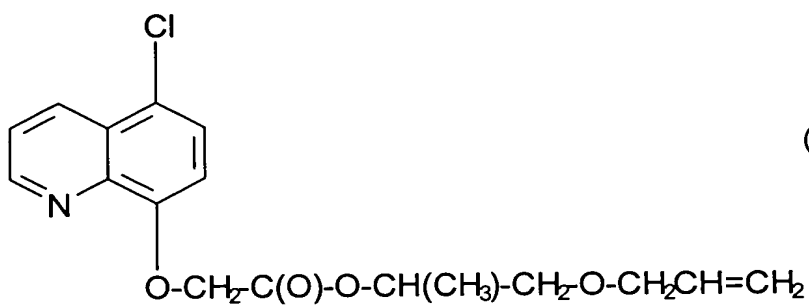
wherein R_{44} and R_{45} are each independently of the other hydrogen or halogen, and R_{46} , R_{47} and R_{48} are each independently of the others C_1 - C_4 alkyl.

The above-mentioned preferences of the compounds of formula I apply also in mixtures of compounds of formula I with the safeners of formulae X to XVIII. Preferred compositions according to the invention comprise a safener selected from the group of formula Xa

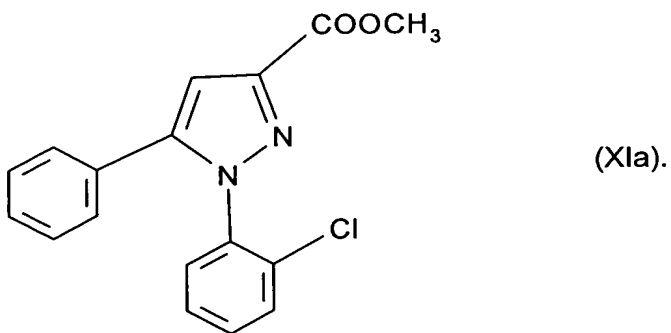
- 37 -



formula Xb

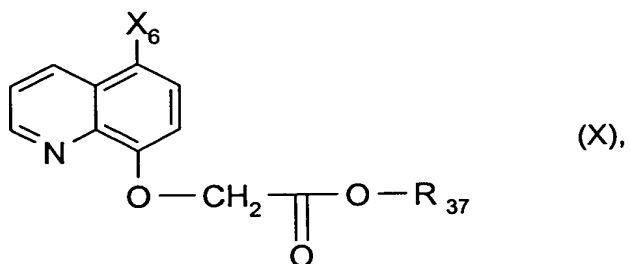


and formula XIa



Further preferred compounds of formulae X, XI and XII are also listed in Tables 9, 10 and 11.

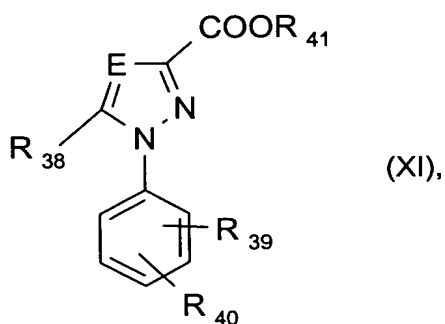
Table 9: Compounds of formula X:



Comp. No.	X ₆	R ₃₇
9.01	Cl	-CH(CH ₃)-C ₅ H ₁₁ -n
9.02	Cl	-CH(CH ₃)-CH ₂ OCH ₂ CH=CH ₂
9.03	Cl	H
9.04	Cl	C ₄ H ₉ -n

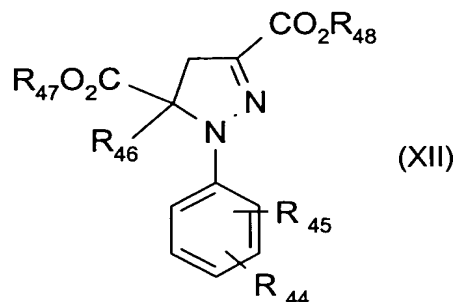
Preferred compounds of formula XI are listed in the following Table 10.

Table 10: Compounds of formula XI:



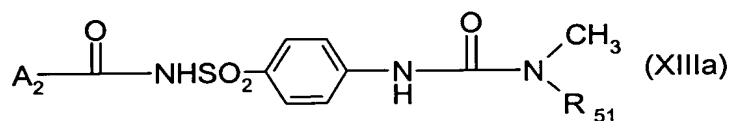
Comp. No.	R ₄₁	R ₃₈	R ₃₉	R ₄₀	E
10.01	CH ₃	phenyl	2-Cl	H	CH
10.02	CH ₃	phenyl	2-Cl	4-Cl	CH
10.03	CH ₃	phenyl	2-F	H	CH
10.04	CH ₃	2-chlorophenyl	2-F	H	CH
10.05	C ₂ H ₅	CCl ₃	2-Cl	4-Cl	N
10.06	CH ₃	phenyl	2-Cl	4-CF ₃	N
10.07	CH ₃	phenyl	2-Cl	4-CF ₃	N

Preferred compounds of formula XII are listed in the following Table 11.

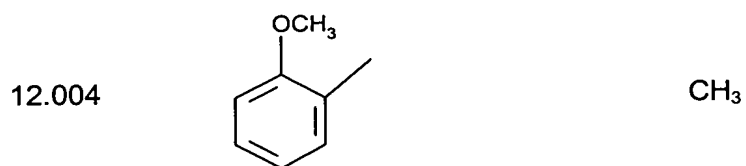
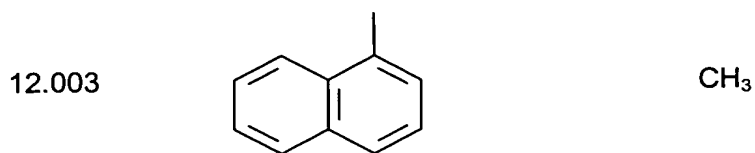
Table 11: Compounds of formula XII:

Comp. No.	R ₄₆	R ₄₇	R ₄₈	R ₄₄	R ₄₅
11.01	CH ₃	CH ₃	CH ₃	2-Cl	4-Cl
11.02	CH ₃	C ₂ H ₅	CH ₃	2-Cl	4-Cl
11.03	CH ₃	C ₂ H ₅	C ₂ H ₅	2-Cl	4-Cl

Preferred compounds of formula XIII are listed in the following Table 12 as compounds of formula XIIIa:

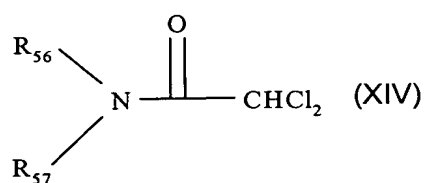
Table 12: Compounds of formula XIIIa:

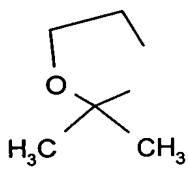
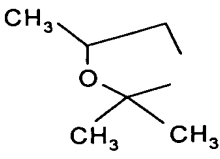
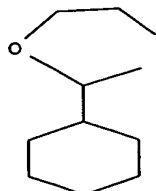
Comp. No.	A ₂	R ₅₁
12.001		H
12.002		H



Preferred compounds of formula XIV are listed in the following Table 13:

Table 13: Compounds of formula XIV:

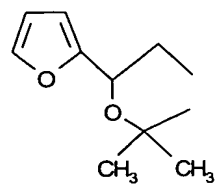


Comp. No.	R ₅₆	R ₅₇	R ₅₆ +R ₅₇
13.001	$\text{CH}_2=\text{CHCH}_2$	$\text{CH}_2=\text{CHCH}_2$	-
13.002	--	--	
13.003	--	--	
13.004	-	-	

13.005

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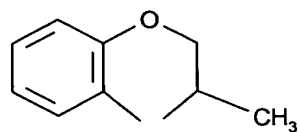
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13.006

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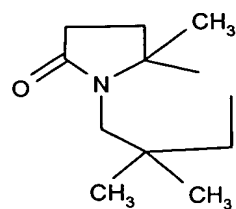
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13.007

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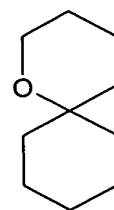
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13.008

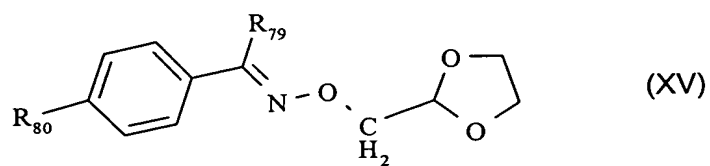
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Preferred compounds of formula XV are listed in the following Table 14:

Table 14: Compounds of formula XV:



(XV)

Comp. No.

 R_{80} R_{79}

14.01

H

CN

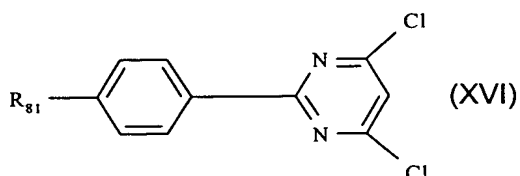
14.02

Cl

 CF_3

Preferred compounds of formula XVI are listed in the following Table 15:

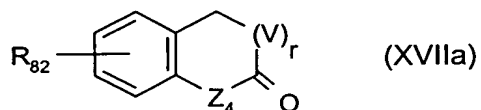
Table 15: Compounds of formula XVI:




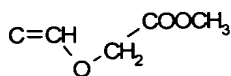
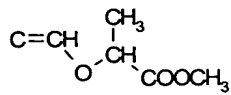
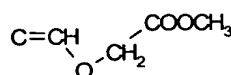
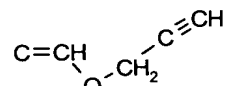
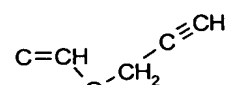
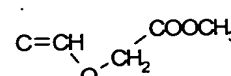
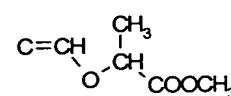
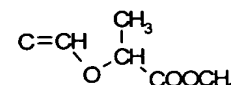
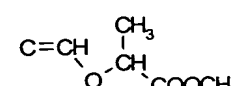
Comp. No.	R ₈₁
<hr/>	
15.01	H
15.02	CH ₃

Preferred compounds of formula XVII are listed in the following Table 16 as compounds of formula XVIIa:

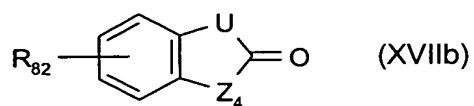
Table 16: Compounds of formula XVIIa



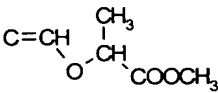
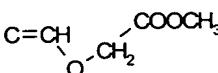
Comp. No.	R ₈₂	Z ₄	V	r
16.001	H		O	1
16.002	H		O	1
16.003	H		O	1

Comp. No.	R ₈₂	Z ₄	V	r
16.004	H		O	1
16.005	H		CH ₂	1
16.006	H		CH ₂	1
16.007	H		S	1
16.008	H		S	1
16.009	H		NCH ₃	1
16.010	H		NCH ₃	1
16.011	H		NCH ₃	1
16.012	H		O	1
16.013	H		S	1

Preferred compounds of formula XVII are listed in the following Table 17 as compounds of formula XVIIb:

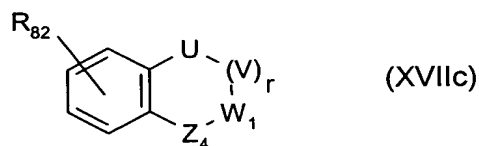
Table 17: Compounds of formula XVIIb

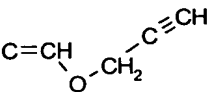
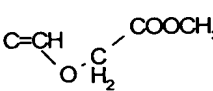
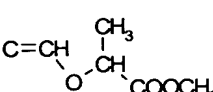
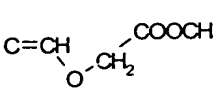
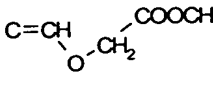
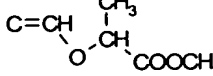
Comp. No.	U	R ₈₂	Z ₄
17.001	O	H	
17.002	O	H	
17.003	O	5-Cl	
17.004	CH ₂	H	
17.005	CH ₂	H	
17.006	CH ₂	H	
17.007	NH	5-Cl	
17.008	NH	5-Cl	
17.009	NH	H	
17.010	NH	H	

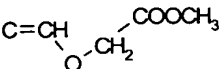
Comp. No.	U	R ₈₂	Z ₄
17.011	NCH ₃	H	
17.012	NCH ₃	H	

Preferred compounds of formula XVII are listed in the following Table 18 as compounds of formula XVIIc:

Table 18: Compounds of formula XVIIc

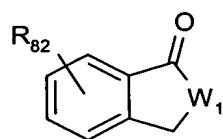


Comp. No.	U	V	r	W ₁	Z ₄	R ₈₂
18.001	O	C=O	1		CH ₂	H
18.002	O	C=O	1		CH ₂	H
18.003	CH ₂	C=O	1		CH ₂	H
18.004	CH ₂	C=O	1		CH ₂	H
18.005	CH ₂	CH ₂	1		C=O	H
18.006	CH ₂	CH ₂	1		C=O	H

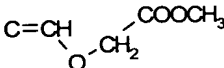
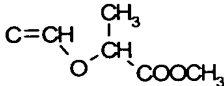
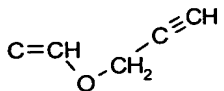
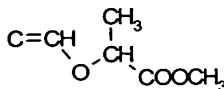
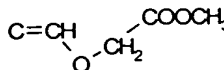
Comp. No.	U	V	r	W ₁	Z ₄	R ₈₂
18.007	NCH ₃	C=O	1		CH ₂	H

Preferred compounds of formula XVII are listed in the following Table 19 as compounds of formula XVIIId:

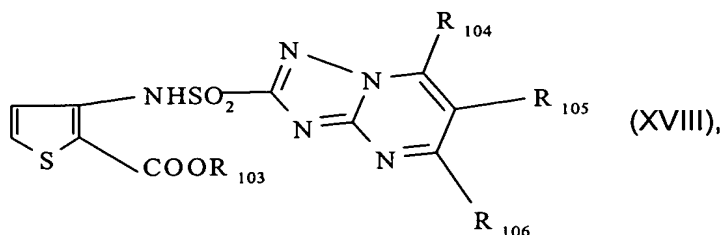
Table 19: Compounds of formula XVIIId



(XVIIId)

Comp. No.	R ₈₂	W ₁
19.001	6-Cl	
19.002	6-Cl	
19.003	H	
19.004	H	
19.005	H	

Preferred compounds of formula XVIII are listed in the following Table 20:

Table 20: Compounds of formula XVIII

Comp. No.	R ₁₀₃	R ₁₀₄	R ₁₀₅	R ₁₀₆
20.01	CH ₃	H	cyclopropyl	H
20.02	CH ₃	C ₂ H ₅	cyclopropyl	H
20.03	CH ₃	cyclopropyl	C ₂ H ₅	H
20.04	CH ₃	CH ₃	H	H
20.05	CH ₃	CH ₃	cyclopropyl	H
20.06	CH ₃	OCH ₃	OCH ₃	H
20.07	CH ₃	CH ₃	OCH ₃	H
20.08	CH ₃	OCH ₃	CH ₃	H
20.09	CH ₃	CH ₃	CH ₃	H
20.10	C ₂ H ₅	CH ₃	CH ₃	H
20.11	C ₂ H ₅	OCH ₃	OCH ₃	H
20.12	H	OCH ₃	OCH ₃	H
20.13	H	CH ₃	CH ₃	H
20.14	C ₂ H ₅	H	H	CH ₃
20.15	H	H	H	CH ₃
20.16	CH ₃	H	H	CH ₃
20.17	CH ₃	CH ₃	H	CH ₃

The invention relates also to a method for the selective control of weeds in crops of useful plants, which comprises treating the useful plants, the seeds or cuttings thereof or the area of cultivation thereof simultaneously or separately with a herbicidally effective amount of a herbicide of formula I and a herbicide-antagonistically effective amount of a safener of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII.

Suitable cultivated plants that can be protected against the harmful effect of the above-mentioned herbicides by the safeners of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII are especially cereals, cotton, soybeans, sugar beet, sugar cane, plantation crops, rape, maize and rice, more especially maize and cereals. Crops are also to be understood as including those that have been rendered tolerant to herbicides or classes of herbicides by conventional breeding or genetic engineering methods.

The weeds to be controlled may be either monocotyledonous or dicotyledonous weeds, for example the monocotyledonous weeds *Avena*, *Agrostis*, *Phalaris*, *Lolium*, *Bromus*, *Alopecurus*, *Setaria*, *Digitaria*, *Brachiaria*, *Echinochloa*, *Panicum*, *Sorghum hal./bic.*, *Rottboellia*, *Cyperus*, *Brachiaria*, *Echinochloa*, *Scirpus*, *Monochoria*, *Sagittaria* and *Stellaria* and the dicotyledonous weeds *Sinapis*, *Chenopodium*, *Galium*, *Viola*, *Veronica*, *Matricaria*, *Papaver*, *Solanum*, *Abutilon*, *Sida*, *Xanthium*, *Amaranthus*, *Ipomoea* and *Chrysanthemum*.

Areas of cultivation are areas of land on which the cultivated plants are already growing or in which the seeds of those cultivated plants have already been sown, as well as the areas of land on which it is intended to grow those cultivated plants.

A safener of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII may, depending on the intended purpose, be used to pretreat the seed material of the cultivated plant (dressing the seed or the cuttings) or may be incorporated into the soil before or after sowing. It can, however, also be applied alone or together with the herbicide after the emergence of the plants. The treatment of the plants or seed with the safener can therefore, in principle, be effected independently of the time at which the herbicide is applied. The treatment of the plants can, however, also be carried out by applying the herbicide and safener simultaneously (for example in the form of a tank mixture). The rate of application of the safener in relation to the herbicide depends largely on the method of application. In the case of field treatment, which is effected either using a tank mixture comprising a combination of safener and herbicide or by the separate application of safener and herbicide, the ratio of herbicide to safener is generally from 100:1 to 1:10, preferably from 20:1 to 1:1. In the case of field treatment, from 0.001 to 1.0 kg of safener/ha, preferably from 0.001 to 0.25 kg of safener/ha, is generally applied.

The rate of application of herbicide is generally from 0.001 to 2 kg/ha, but is preferably from 0.005 to 0.5 kg/ha.

The compositions according to the invention are suitable for any of the methods of application customary in agriculture, for example pre-emergence application, post-emergence application and seed dressing.

In the case of seed dressing, from 0.001 to 10 g of safener/kg of seed, preferably from 0.05 to 2 g of safener/kg of seed, is generally applied. When the safener is applied in liquid form shortly before sowing, with swelling of the seed, it is advantageous to use safener solutions that comprise the active ingredient in a concentration of from 1 to 10 000 ppm, preferably from 100 to 1000 ppm.

For application, the safeners of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII, or combinations of those safeners with the herbicides of formula I, are advantageously processed, together with the adjuvants customary in formulation technology, into formulations, for example into emulsifiable concentrates, coatable pastes, directly sprayable or dilutable solutions, dilute emulsions, wettable powders, soluble powders, dusts, granules or microcapsules.

Such formulations are described, for example, in WO 97/34485, on pages 9 to 13. The formulations are prepared in known manner, e.g. by intimately mixing and/or grinding the active ingredients with liquid or solid formulation adjuvants, for example solvents or solid carriers. Furthermore, in addition surface-active compounds (surfactants) can be used in the preparation of the formulations. Solvents and solid carriers suitable for that purpose are mentioned, for example, in WO 97/34485, on page 6.

Depending on the nature of the active ingredient of formula I to be formulated, there come into consideration as surface-active compounds non-ionic, cationic and/or anionic surfactants and mixtures of surfactants having good emulsifying, dispersing and wetting properties. Examples of suitable anionic, non-ionic and cationic surfactants are listed, for example, in WO 97/34485 on pages 7 and 8. Also suitable for the preparation of the herbicidal compositions according to the invention are the surfactants customarily employed in formulation technology, which are described, *inter alia*, in "Mc Cutcheon's Detergents and

Emulsifiers Annual" MC Publishing Corp., Ridgewood New Jersey, 1981, Stache, H., "Tensid-Taschenbuch", Carl Hanser Verlag, Munich/Vienna, 1981 and M. and J. Ash, "Encyclopedia of Surfactants", Vol I-III, Chemical Publishing Co., New York, 1980-81.

The herbicidal formulations generally contain from 0.1 to 99 % by weight, especially from 0.1 to 95 % by weight, of active ingredient mixture comprising the compound of formula I and the compounds of formulae X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII, from 1 to 99.9 % by weight of a solid or liquid formulation adjuvant and from 0 to 25 % by weight, especially from 0.1 to 25 % by weight, of a surfactant. Whereas commercial products will usually preferably be formulated as concentrates, the end user will normally employ dilute formulations.

The compositions may also comprise further additives, such as stabilisers, vegetable oils or epoxidised vegetable oils (epoxidised coconut oil, rapeseed oil or soybean oil), anti-foams, e.g. silicone oil, preservatives, viscosity regulators, binders, tackifiers and also fertilisers or other active ingredients. There are various suitable methods and techniques for using safeners of formulae X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII or compositions comprising them to protect cultivated plants against the harmful effects of herbicides of formula I; the following are examples:

i) Seed dressing

- a) Dressing the seeds with a wettable powder formulation of an active ingredient of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII, by shaking in a vessel until the formulation is uniformly distributed on the seed surface (dry dressing). Approximately from 1 to 500 g of active ingredient of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII (from 4 g to 2 kg of wettable powder) are used per 100 kg of seed.
- b) Dressing the seeds with an emulsifiable concentrate of an active ingredient of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII, in accordance with method a) (wet dressing).
- c) Dressing by immersing the seeds in a liquid formulation containing from 100 to 1000 ppm of active ingredient of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII for from 1 to 72 hours and, if desired, subsequently drying the seeds (immersion dressing).

Dressing the seeds or treating the germinated seedlings are naturally the preferred methods of application, because treatment with the active ingredient is directed wholly at the target crop. From 1 to 1000 g of antidote, preferably from 5 to 250 g of antidote, is generally used

per 100 kg of seed, although depending on the method employed, which also allows the addition of other active ingredients or micronutrients, amounts that exceed or fall short of the specified concentration limits may be employed (repeat dressing).

ii) Application in the form of a tank mixture

A liquid formulation of a mixture of antidote and herbicide (ratio of the one to the other from 10:1 to 1:100) is used, the rate of application of herbicide being from 0.005 to 5.0 kg per hectare. Such tank mixtures are applied before or after sowing.

iii) Application to the seed furrow

The active ingredient of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII is introduced into the open, sown seed furrow in the form of an emulsifiable concentrate, wettable powder or granules. After the seed furrow has been covered, the herbicide is applied pre-emergence in the normal manner.

iv) Controlled active ingredient release

The active ingredient of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII is applied in solution to mineral granule carriers or polymerised granules (urea/formaldehyde) and dried. Where appropriate, it is also possible to apply a coating (coated granules) that allows the active ingredient to be released in metered amounts over a specific period.

The activity of herbicidal and plant growth-inhibiting compositions according to the invention comprising a herbicidally effective amount of compound of formula I and a herbicide-antagonistically effective amount of compound of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII can be increased by the addition of spray tank adjuvants.

Such adjuvants may be, for example: non-ionic surfactants, mixtures of non-ionic surfactants, mixtures of anionic surfactants with non-ionic surfactants, cationic surfactants, organosilicon surfactants, mineral oil derivatives with and without surfactants, vegetable oil derivatives with and without the addition of surfactant, alkylated derivatives of oils of vegetable or mineral origin with and without surfactants, fish oils and other animal oils of animal nature and alkyl derivatives thereof with and without surfactants, naturally occurring higher fatty acids, preferably having from 8 to 28 carbon atoms, and alkyl ester derivatives thereof, organic acids containing an aromatic ring system and one or more carboxylic acid esters, and alkyl derivatives thereof, and also suspensions of polymers of vinyl acetate or copolymers of vinyl

acetate/acrylic acid esters. Mixtures of individual adjuvants with one another and combined with organic solvents may lead to the activity being further increased.

Suitable non-ionic surfactants include, for example, polyglycol ether derivatives of aliphatic or cycloaliphatic alcohols, of saturated or unsaturated fatty acids and alkylphenols, preferably that can contain from 3 to 30 glycol ether groups and from 8 to 20 carbon atoms in the (aliphatic) hydrocarbon radical and from 6 to 18 carbon atoms in the alkyl radical of the alkylphenols.

Further suitable non-ionic surfactants are the water-soluble polyethylene oxide adducts of polypropylene glycol, ethylenediaminopolypropylene glycol and alkyl polypropylene glycol having preferably from 1 to 10 carbon atoms in the alkyl chain, which adducts contain preferably from 20 to 250 ethylene glycol ether groups and from 10 to 100 propylene glycol ether groups. The said compounds usually contain from 1 to 5 ethylene glycol units per propylene glycol unit.

There may also be mentioned, as further examples of non-ionic surfactants, nonylphenol polyethoxyethanols, castor oil polyglycol ethers, polypropylene/polyethylene oxide adducts, tributylphenoxypolyethoxyethanol, polyethylene glycol and octylphenoxypolyethoxyethanol.

Fatty acid esters of polyoxyethylenesorbitan, e.g. polyoxyethylenesorbitan trioleate, are also suitable.

Preferred anionic surfactants are especially alkyl sulfates, alkyl sulfonates, alkylaryl sulfonates, alkylated phosphoric acids, and ethoxylated derivatives thereof. The alkyl radicals usually contain from 8 to 24 carbon atoms.

Preferred non-ionic surfactants are known by the following trade names:

polyoxyethylene cocoalkylamine (e.g. AMIET[®] 105 (Kao Co.)), polyoxyethylene oleylamine (e.g. AMIET[®] 415 (Kao Co.)), nonylphenol polyethoxyethanols, polyoxyethylene stearylamine (e.g. AMIET[®] 320 (Kao Co.)), N-polyethoxyethylamines (e.g. GENAMIN[®] (Hoechst AG)), N,N,N',N'-tetra(polyethoxypolypropoxyethyl)ethylene-diamine (e.g. TERRONIL[®] and TETRONIC[®] (BASF Wyandotte Corp.)), BRIJ[®] (Atlas Chemicals), ETHYLAN[®] CD and

ETHYLAN[®] D (Diamond Shamrock), GENAPOL[®] C, GENAPOL[®] O, GENAPOL[®] S and GENAPOL[®] X080 (Hoechst AG), EMULGEN[®] 104P, EMULGEN[®] 109P and EMULGEN[®] 408 (Kao Co.); DISTY[®] 125 (Geronazzo), SOPROPHOR[®] CY 18 (Rhone Poulenc S.A.); NONISOL[®] (Ciba-Geigy), MRYJ[®] (ICI); TWEEN[®] (ICI); EMULSOGEN[®] (Hoechst AG); AMIDOX[®] (Stephan Chemical Co.), ETHOMID[®] (Armak Co.); PLURONIC[®] (BASF Wyandotte Corp.), SOPROPHOR[®] 461P (Rhône Poulenc S.A.), SOPROPHOR[®] 496/P (Rhone Poulenc S.A.), ANTAROX FM-63 (Rhone Poulenc S.A.), SLYGARD 309 (Dow Corning), SILWET 408, SILWET L-7607N (Osi-Specialities).

The cationic surfactants are especially quaternary ammonium salts that contain as N-substituent(s) at least one alkyl radical having from 8 to 22 carbon atoms and, as further substituents, optionally halogenated lower alkyl, benzyl or hydroxy-lower alkyl radicals. The salts are preferably in the form of halides, methyl sulfates or ethyl sulfates, for example stearyltrimethylammonium chloride or benzyldi(2-chloroethyl)ethylammonium bromide.

The oils used are either of mineral or natural origin. The natural oils can in addition be of animal or vegetable origin. Of the animal oils preference is given especially to derivatives of beef tallow, but fish oils (e.g. sardine oil) and derivatives thereof are also used. Vegetable oils are mostly seed oils of varied origin. Examples of vegetable oils used especially that may be mentioned include coconut oil, rapeseed oil and sunflower oil and derivatives thereof.

In the composition according to the invention, the concentrations of oil additive are generally from 0.01 to 2 % based on the spray mixture. The oil additive can, for example, be added to the spray tank in the desired concentration after the spray mixture has been prepared.

Preferred oil additives in the composition according to the invention comprise an oil of vegetable origin, for example rapeseed oil or sunflower oil, alkyl esters of oils of vegetable origin, for example methyl derivatives, or mineral oils.

Especially preferred oil additives comprise alkyl esters of higher fatty acids (C₈-C₂₂), especially methyl derivatives of C₁₂-C₁₈ fatty acids, for example the methyl esters of lauric acid, palmitic acid and oleic acid. Those esters are known as methyl laurate (CAS-111-82-0), methyl palmitate (CAS-112-39-0) and methyl oleate (CAS-112-62-9).

The application and action of the oil additives can be improved by combining them with surface-active substances, such as non-ionic, anionic or cationic surfactants. Examples of suitable anionic, non-ionic and cationic surfactants are listed in WO 97/34485 on pages 7 and 8.

Preferred surface-active substances are anionic surfactants of the dodecylbenzylsulfonate type, especially the calcium salts thereof, and also non-ionic surfactants of the fatty alcohol ethoxylate type. Special preference is given to ethoxylated C₁₂-C₂₂ fatty alcohols having a degree of ethoxylation of from 5 to 40. Examples of commercially available preferred surfactants are the Genapol types (Clariant AG, Muttenz, Switzerland).

The concentration of the surface-active substances in relation to the total additive is generally from 1 to 30 % by weight.

Examples of oil additives that consist of mixtures of oils or mineral oils, or derivatives thereof, with surfactants include Edenor ME SU®, Emery 2231® (Henkel subsidiary Cognis GMBH, DE), Turbocharge® (Zeneca Agro, Stoney Creek, Ontario, CA) or, more especially, Actipron® (BP Oil UK Limited, GB).

The addition of an organic solvent to the oil additive/surfactant mixture can also bring about a further increase in activity. Suitable solvents include, for example, Solvesso® (ESSO) and Aromatic Solvent® (Exxon Corporation) types.

The concentration of such solvents can be from 10 to 80 %, by weight, of the total weight.

Such oil additives, which, for example, are also described in US-A-4 834 908, are especially preferred for the composition according to the invention. A more especially preferred oil additive is known by the name MERGE®, can be obtained from BASF Corporation and is basically described, for example, in US-A-4 834 908, col. 5, as Example COC-1. A further oil additive that is preferred in accordance with the invention is SCORE® (Novartis Crop Protection Canada).

Surfactants, oils, especially vegetable oils, derivatives thereof, such as alkylated fatty acids and mixtures thereof, for example with preferably anionic surfactants, such as alkylated phosphoric acids, alkyl sulfates and alkylaryl sulfonates and also higher fatty acids, that are customary in formulation and adjuvant technology and that can also be used in the

compositions according to the invention and in spray tank solutions thereof, are described, *inter alia*, in "McCutcheon's Detergents and Emulsifiers Annual" MC Publishing Corp., Ridgewood New Jersey, 1998, Stache, H., "Tensid-Taschenbuch", Carl Hanser Verlag, Munich/Vienna, 1990, M. and J. Ash, "Encyclopedia of Surfactants", Vol I-IV, Chemical Publishing Co., New York, 1981-89, G. Kapusta, "A Compendium of Herbicide Adjuvants", Southern Illinois Univ. , 1998, L. Thomson Harvey, "A Guide to Agricultural Spray Adjuvants Used in the United States", Thomson Pubns., 1992.

Preferred formulations have especially the following compositions (% = percent by weight)

Emulsifiable concentrates:

active ingredient mixture:	from 1 to 90 %, preferably from 5 to 20 %
surface-active agent:	from 1 to 30 %, preferably from 10 to 20 %
liquid carrier:	from 5 to 94 %, preferably from 70 to 85 %

Dusts:

active ingredient mixture:	from 0.1 to 10 %, preferably from 0.1 to 5 %
solid carrier:	from 99.9 to 90 %, preferably from 99.9 to 99 %

Suspension concentrates:

active ingredient mixture:	from 5 to 75 %, preferably from 10 to 50 %
water:	from 94 to 24 %, preferably from 88 to 30 %
surface-active agent:	from 1 to 40 %, preferably from 2 to 30 %

Wettable powders:

active ingredient mixture:	from 0.5 to 90 %, preferably from 1 to 80 %
surface-active agent:	from 0.5 to 20 %, preferably from 1 to 15 %
solid carrier:	from 5 to 95 %, preferably from 15 to 90 %

Granules:

active ingredient mixture:	from 0.1 to 30 %, preferably from 0.1 to 15 %
solid carrier:	from 99.5 to 70 %, preferably from 97 to 85 %

The Examples that follow illustrate the invention further. They do not limit the invention.

Formulation Examples for mixtures of herbicides of formula I and safener of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII (% = percent by weight)

<u>F1. Emulsifiable concentrates</u>	a)	b)	c)	d)
active ingredient mixture	5 %	10 %	25 %	50 %
calcium dodecylbenzenesulfonate	6 %	8 %	6 %	8 %
castor oil polyglycol ether (36 mol of ethylene oxide)	4 %	-	4 %	4 %
octylphenol polyglycol ether (7-8 mol of ethylene oxide)	-	4 %	-	2 %
cyclohexanone	-	-	10 %	20 %
aromatic C ₉ -C ₁₂ hydrocarbon mixture	85 %	78 %	55 %	16 %

Emulsions of any desired concentration can be prepared from such concentrates by dilution with water.

<u>F2. Solutions</u>	a)	b)	c)	d)
active ingredient mixture	5 %	10 %	50 %	90 %
1-methoxy-3-(3-methoxy-propoxy)-propane	-	20 %	20 %	-
polyethylene glycol (mol. wt. 400)	20 %	10 %	-	-
N-methyl-2-pyrrolidone	-	-	30 %	10 %
aromatic C ₉ -C ₁₂ hydrocarbon mixture	75 %	60 %	-	-

The solutions are suitable for application in the form of micro-drops.

<u>F3. Wettable powders</u>	a)	b)	c)	d)
active ingredient mixture	5 %	25 %	50 %	80 %
sodium lignosulfonate	4 %	-	3 %	-
sodium lauryl sulfate	2 %	3 %	-	4 %
sodium diisobutylphenylsulfonate	-	6 %	5 %	6 %
octylphenol polyglycol ether (7-8 mol of ethylene oxide)	-	1 %	2 %	-
highly dispersed silicic acid	1 %	3 %	5 %	10 %
kaolin	88 %	62 %	35 %	-

The active ingredient is mixed thoroughly with the adjuvants and the mixture is thoroughly ground in a suitable mill, affording wettable powders which can be diluted with water to give suspensions of any desired concentration.

<u>F4. Coated granules</u>	a)	b)	c)
active ingredient mixture	0.1 %	5 %	15 %
highly dispersed silicic acid	0.9 %	2 %	2 %
inorganic carrier material	99.0 %	93 %	83 %
(\bar{A} 0.1 - 1 mm)			

for example CaCO_3 or SiO_2

The active ingredient is dissolved in methylene chloride, the solution is sprayed onto the carrier, and the solvent is subsequently evaporated off *in vacuo*.

<u>F5. Coated granules</u>	a)	b)	c)
active ingredient mixture	0.1 %	5 %	15 %
polyethylene glycol (mol. wt. 200)	1.0 %	2 %	3 %
highly dispersed silicic acid	0.9 %	1 %	2 %
inorganic carrier material	98.0 %	92 %	80 %
(\bar{A} 0.1 - 1 mm)			

for example CaCO_3 or SiO_2

The finely ground active ingredient is uniformly applied, in a mixer, to the carrier material moistened with polyethylene glycol, yielding non-dusty coated granules.

<u>F6. Extruder granules</u>	a)	b)	c)	d)
active ingredient mixture	0.1 %	3 %	5 %	15 %
sodium lignosulfonate	1.5 %	2 %	3 %	4 %
carboxymethylcellulose	1.4 %	2 %	2 %	2 %
kaolin	97.0 %	93 %	90 %	79 %

The active ingredient is mixed with the adjuvants, and the mixture is ground, moistened with water, extruded and then dried in a stream of air.

<u>F7. Dusts</u>	a)	b)	c)
active ingredient mixture	0.1 %	1 %	5 %
talcum	39.9 %	49 %	35 %
kaolin	60.0 %	50 %	60 %

Ready-to-use dusts are obtained by mixing the active ingredient with the carriers and grinding the mixture in a suitable mill.

<u>F8. Suspension concentrates</u>	a)	b)	c)	d)
active ingredient mixture	3 %	10 %	25 %	50 %
ethylene glycol	5 %	5 %	5 %	5 %
nonylphenol polyglycol ether (15 mol of ethylene oxide)	-	1 %	2 %	-
sodium lignosulfonate	3 %	3 %	4 %	5 %
carboxymethylcellulose	1 %	1 %	1 %	1 %
37 % aqueous formaldehyde solution	0.2 %	0.2 %	0.2 %	0.2 %
silicone oil emulsion	0.8 %	0.8 %	0.8 %	0.8 %
water	87 %	79 %	62 %	38 %

The finely ground active ingredient is intimately mixed with the adjuvants, giving a suspension concentrate from which suspensions of any desired concentration can be obtained by dilution with water.

It is often more practical to formulate the active ingredient of formula I and the mixing partner of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII separately and then, shortly before application, to bring them together in the applicator in the desired mixing ratio in the form of a "tank mixture" in water.

The ability of the safeners of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII to protect cultivated plants against the phytotoxic action of herbicides of formula I is illustrated in the following Examples.

Biological Example 1: Safening action

Under greenhouse conditions, the test plants are grown in plastics pots to the 4-leaf stage. At that stage, on the one hand the herbicide alone, and on the other hand mixtures of the herbicide with the test substances to be tested as safeners, are applied to the test plants.

The test substances are applied in the form of an aqueous suspension prepared from a 25 % wettable powder (Example F3, b)), using 500 litres of water/ha. 2 to 3 weeks after application, the phytotoxic action of the herbicide on the cultivated plants, for example maize and cereals, is evaluated using a percentage scale. 100 % indicates that the test plant has died, and 0 % indicates no phytotoxic action.

The results obtained in this test demonstrate that the damage caused to the cultivated plant by the herbicide of formula I can be appreciably reduced by the compounds of formula X, XI, XII, XIII, XIV, XV, XVI, XVII or XVIII.

The same results are obtained when the mixtures are formulated in accordance with Examples F1, F2 and F4 to F8.

The compound of formula I can advantageously be mixed with a number of other known herbicides. As a result, for example, the spectrum of weeds is substantially broadened and in many cases an increase in selectivity with respect to the useful plants is achieved. In particular, mixtures of the compound of formula I with at least one of the following herbicides are important:

herbicides from the class of the phenoxy-phenoxypropionic acids, for example diclofop-methyl, fluazifop-P-butyl, quizalafop-P-ethyl, propaquizafop, clodinafop-P-propargyl, cyhalofop-butyl, fenoxaprop-P-ethyl, haloxyfop-methyl or haloxyfop-etoethyl;

herbicides from the class of the hydroxylamines, for example sethoxidim, alloxydim, clethodim, cycloxydim, tepralkoxydim, tralkoxydim or butroxydim;

herbicides from the class of the sulfonylureas, for example amidosulfuron, azimsulfuron, bensulfuron-methyl, chlorimuron-ethyl, cinosulfuron, chlorsulfuron, chlorimuron, cyclosulfamuron, ethametsulfuron-methyl, ethoxysulfuron, fluazasulfuron, flupyrsulfuron, imazosulfuron, iodosulfuron (CAS RN 144550-36-7 and 185119-76-0), metsulfuron-methyl, nicosulfuron, oxasulfuron, primisulfuron, pyrazosulfuron-ethyl, sulfosulfuron, rimsulfuron, thifensulfuron-methyl, triasulfuron, tribenuron-methyl, triflurosulfuron-methyl, prosulfuron, flucarbazone or tritosulfuron (CAS RN 142469-14-5);

herbicides from the class of the imidazolinones, such as imazethapyr, imazamethabenz, imazamethapyr, imazaquin, imazamox or imazapyr;

herbicides from the class of the pyrimidines, such as pyriithiobac-sodium, pyriminobac, bispyribac-sodium;

herbicides from the class of the triazines, for example atrazine, simazine, simethryne, terbutryne, terbuthylazine;

herbicides from the class of the ureas, such as isoproturon, chlortoluron, diuron, dymron, fluometuron, linuron or methabenzthiazuron;

herbicides from the class of the phosphonic acid derivatives, for example glyphosate, glufosinate, sulfosate or phosphinothricin;

herbicides from the class of the PPO, for example nitrofen, bifenox, acifluorfen, lactofen, oxyfluorfen, ethoxyfen, fluoroglycofen, fomesafen, halosafen, azafenidin (CAS RN. - 68049-83-2), benzfendizone (CAS RN 158755-95-4), butafenacil (known from US-A-5 183 492, CAS RN 158755-95-4), carfentrazone-ethyl, cinidon-ethyl (CAS RN 142891-20-1), flumichlorac-pentyl, flumioxazin, fluthiacet-methyl, oxadiargyl, oxadiazon, pentoxazone, sulfentrazone, fluazolate (CAS RN 174514-07-9) or pyraflufen-ethyl;

herbicides from the class of the chloroacetanilides, for example alachlor, acetochlor, butachlor, dimethachlor, dimethenamid, S-dimethenamid, metazachlor, metolachlor, S-metolachlor, pretilachlor, propachlor, propisochlor, thenylchlor or pethoamid (CASRN 106700-29-2)

herbicides from the class of the phenoxyacetic acids, for example 2,4-D, fluroxypyr, MCPA, MCPP, MCPB, trichlorpyr or mecropop-P;

herbicides from the class of the triazinones, for example hexazinone, met amitron or metribuzin;

herbicides from the class of the dinitroanilines, for example oryzalin, pendimethalin or trifluralin;

herbicides from the class of the azinones, for example chloridazon or norflurazon;

herbicides from the class of the carbamates, for example chlorpropham, desmedipham, phenmedipham or propham;

herbicides from the class of the oxyacetamides, for example mefenacet or fluthiacet;

herbicides from the class of the thiolcarbamates, for example butylate, cycloate, diallate, EPTC, esprocarb, molinate, prosulfocarb, thiobencarb or triallate;

herbicides from the class of the azoloureas, for example fentrazamide (CAS RN158237-07-1) or cafenstrole;

herbicides from the class of the benzoic acids, for example dicamba or picloram;

herbicides from the class of the anilides, for example diflufenican, or propanil;

herbicides from the class of the nitriles, for example bromoxynil, dichlobenil or ioxynil;

herbicides from the class of the triones, for example sulcotrione, mesotrione (known from US-A-5 006 158), isoxaflutole or isoxachlortole;

herbicides from the class of the sulfonamides, for example flucarbazone (CAS RN 181274-17-9), procarbazon (CAS RN 145026-81-9), chlorasulam, diclosulam (CAS RN 145701-21-9), florasulam, flumetsulam or metosulam;

and also amitrole, benfuresate, bentazone, cinmethylin, clomazone, chlopyralid, difenzoquat, dithiopyr, ethofumesate, flurochloridone, indanofan, isoxaben, oxaziclomefone, pyridate, pyridafol (CAS RN. 40020-01-7), quinchlorac, quinmerac, tridiphane or flamprop.

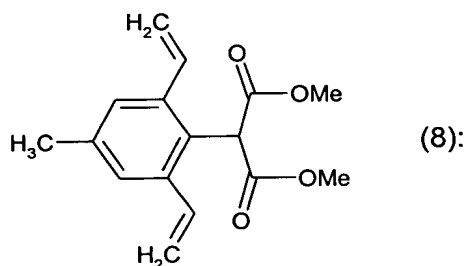
Unless specified otherwise, the above-mentioned mixing partners of the compound of formula I are known from The Pesticide Manual, Eleventh Edition, 1997, BCPC. The mixing

partners of the compound of formula I can, if desired, also be in the form of esters or salts, as mentioned, for example, in The Pesticide Manual, Eleventh Edition, 1997, BCPC.

The following Examples illustrate the invention further without implying any limitation.

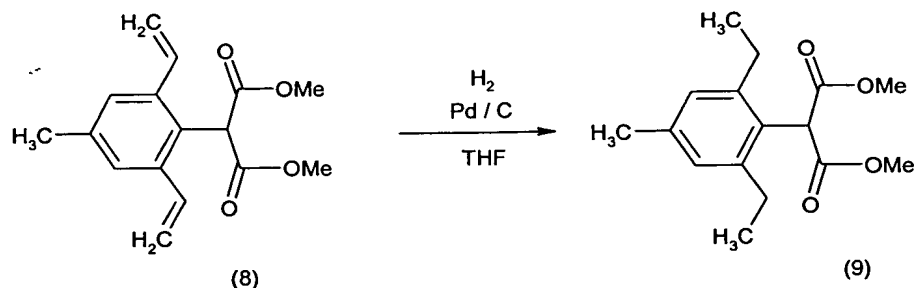
Preparation Examples:

Example P1: Preparation of

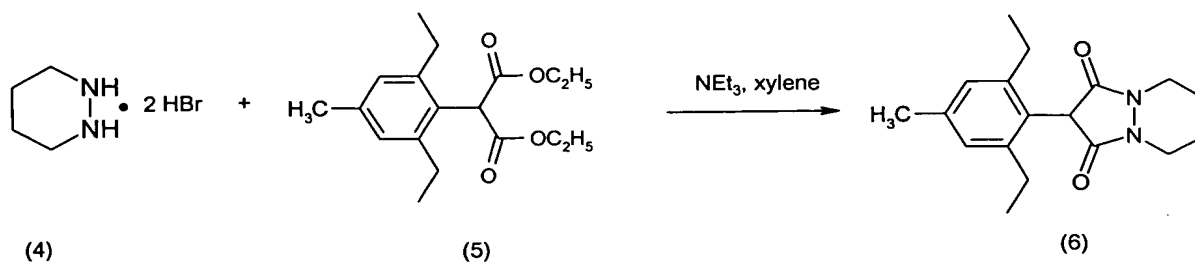


To a solution of 20 g of 2-(2,6-dibromo-4-methyl-phenyl)-malonic acid dimethyl ester (52.6 mmol) in 400 ml of toluene (degassed 3 times, vacuum/argon) there are added first 36.7 g (0.116 mol) of tributylvinylstannane and then 2 g of tetrakis(triphenylphosphine)-palladium. The reaction mixture is then stirred for 9 hours at a temperature of from 90 to 95°C. After filtration over Hyflo and concentration using a rotary evaporator, and after purification by chromatography, 15.3 g of **(8)** are obtained in the form of a yellow oil, which is used in the next reaction without being further purified.

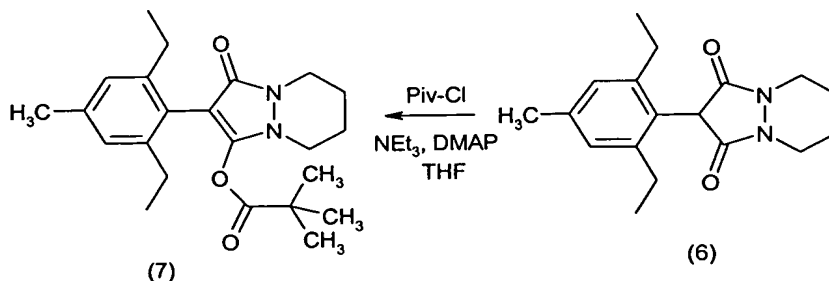
Example P2:



15.2 g of compound **(8)** obtained according to Example P1 are hydrogenated with hydrogen over a palladium catalyst (carbon as carrier, 7 g of 5% Pd/C) in 160 ml of tetrahydrofuran at a temperature of from 20 to 25°C. When the hydrogenation is complete, the product is filtered over Hyflo and the filtrate obtained is concentrated using a rotary evaporator. 13.7 g of **(9)** are obtained in the form of yellow crystals having a melting point of from 47 to 49 °C.

Example P3:

71.8 g (0.71 mol) of triethylamine are added to a suspension of 40 g (0.15 mol) of **(4)** in 1000 ml of xylene and the mixture is degassed (4 times, vacuum/argon). The yellow suspension is then heated to a temperature of 60°C and stirred for 3 hours. 42.5 g (0.15 mol) of **(5)** are subsequently added and the mixture is heated to a bath temperature of 150°C in order continuously to distill off excess triethylamine and the resulting ethanol. After 3 hours, the reaction mixture is cooled to a temperature of 40°C and introduced into 500 ml of an ice/water mixture. The reaction mixture is rendered alkaline using 100 ml of aqueous 1N sodium hydroxide solution, and the aqueous phase (containing the product) is washed twice with ethyl acetate. After washing back the organic phase twice with aqueous 1N sodium hydroxide solution, the aqueous phases are combined, the remaining xylene is distilled off and the combined aqueous phases are adjusted to pH 2-3 using 4N HCl with cooling. The precipitated product obtained is poured onto a suction filter, and the filtration residue is washed with water and briefly with hexane, and then dried *in vacuo* at a temperature of 60°C over P₂O₅. 34.6 g of **(6)** are obtained in the form of a slightly beige solid having a melting point of from 242 to 244°C (decomposition).

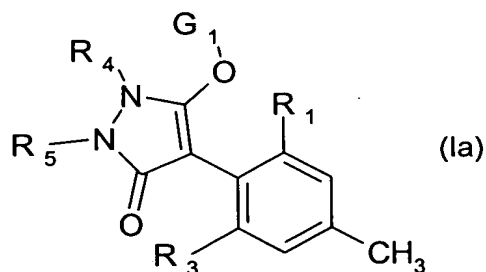
Example P4:

A catalytic amount of 4-dimethylaminopyridine is added to a solution, cooled to a temperature of 0°C, of 3 g (10.4 mmol) of **(6)** and 1.6 g (15.8 mmol) of triethylamine in 100 ml of tetrahydrofuran. 1.57 g (13.0 mmol) of pivaloyl chloride is then added dropwise. After stirring for 30 minutes at a temperature of 0°C, the cooling is removed and the stirring is



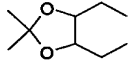

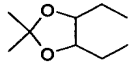

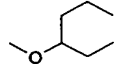
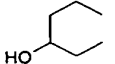
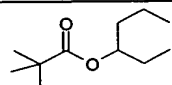

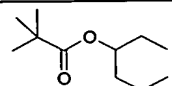

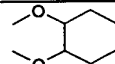

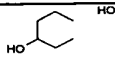

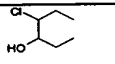
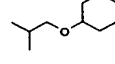
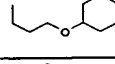
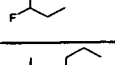
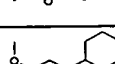
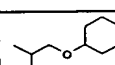
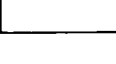

continued for a further 60 minutes. The reaction mixture is then introduced into saturated aqueous sodium chloride solution and the organic phase is separated off. The organic phase is dried over magnesium sulfate, filtered off and concentrated by evaporation. After purification by chromatography and recrystallisation from diethyl ether, 2.94 g of **(7)** having a melting point of from 135 to 136°C are obtained.

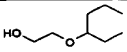
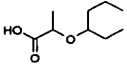
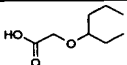
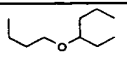

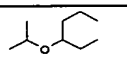

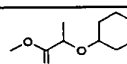

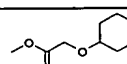
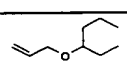
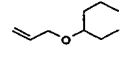

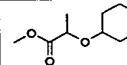
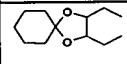
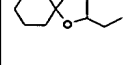

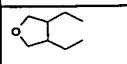
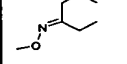
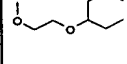

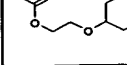

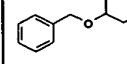
In the following Tables, the melting points are quoted in °C. Me denotes the methyl group. Where a formula is given for the substituents G_1 to G_9 and R_4 and R_5 (independently of each other), the left-hand side of that formula is the linking point to the oxygen atom of the heterocycle Q_1 to Q_9 . In the case of the substituent meaning of R_4 and R_5 together, the right-hand side of the molecule is the linking point to the heterocycle Q_1 . The remaining terminal valencies are methyl groups.

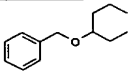

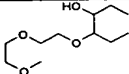
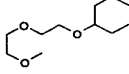
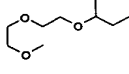









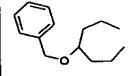



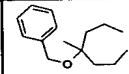
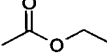

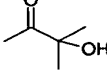

Table 1: Compounds of formula Ia:

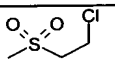
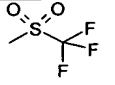
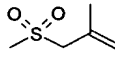
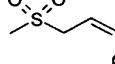
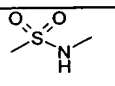
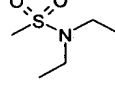
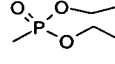
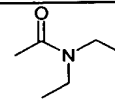
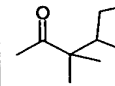
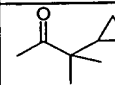
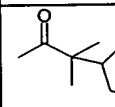
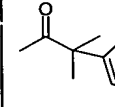
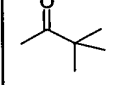
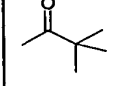


No.	R_1	R_2	R_4/R_5	G_1	Physical data
1.01	ethyl	ethyl	$-(CH_2)_4-$	-H	m.p. 209-211
1.02	ethyl	ethyl	$-(CH_2)_4-$		m.p. 125-127
1.03	ethyl	ethyl			m.p. 195
1.04	ethyl	ethyl			m.p. 180
1.05	ethyl	ethyl		-H	wax

No.	R ₁	R ₂	R ₄ /R ₅	G ₁	Physical data
1.06	ethyl	ethyl			solid
1.07	ethyl	ethyl			crystalline
1.08	ethyl	ethyl		-H	crystalline
1.09	ethyl	ethyl		-H	solid
1.10	ethyl	ethyl		-H	solid
1.11	ethyl	ethyl		-H	solid
1.12	ethyl	ethyl			m.p. 153-155
1.13	ethyl	ethyl			oil
1.14	ethyl	ethyl			oil
1.15	ethyl	ethyl			solid
1.16	ethyl	ethyl		-H	solid
1.17	ethyl	ethyl		-H	viscous
1.18	ethyl	ethyl		-H	viscous
1.19	ethyl	ethyl		-H	viscous
1.20	ethyl	ethyl		-H	viscous
1.21	ethyl	ethyl		-H	viscous
1.22	ethyl	ethyl			viscous

No.	R ₁	R ₂	R ₄ /R ₅	G ₁	Physical data
1.23	ethyl	ethyl		-H	viscous
1.24	ethyl	ethyl		-H	solid
1.25	ethyl	ethyl		-H	solid
1.26	ethyl	ethyl			solid
1.27	ethyl	ethyl			oil
1.28	ethyl	ethyl			viscous
1.29	ethyl	ethyl		-H	viscous
1.30	ethyl	ethyl		-H	viscous
1.31	ethyl	ethyl			viscous
1.32	ethyl	ethyl		-H	viscous
1.33	ethyl	ethyl		-H	solid
1.34	ethyl	ethyl			solid
1.35	ethyl	ethyl		-H	crystalline
1.36	ethyl	ethyl		-H	wax
1.37	ethyl	ethyl			viscous
1.38	ethyl	ethyl			viscous
1.39	ethyl	ethyl		-H	solid

No.	R ₁	R ₂	R ₄ /R ₅	G ₁	Physical data
1.40	ethyl	ethyl			wax
1.41	ethyl	ethyl		-H	amorphous
1.42	ethyl	ethyl		-H	wax
1.43	ethyl	ethyl			oil
1.44	ethyl	ethyl		-H	crystalline
1.45	ethyl	ethyl		-H	solid
1.46	ethyl	ethyl			solid
1.47	ethyl	ethyl		-H	m.p. 283
1.48	ethyl	ethyl		-H	m.p. 227
1.49	ethyl	ethyl			m.p. 122-124
1.50	ethyl	ethyl		-H	m.p. 148-151
1.51	ethyl	ethynyl		-H	m.p. 163-166
1.52	ethyl	ethynyl			m.p. 114-116
1.53	ethyl	ethyl		-H	solid
1.54	ethyl	ethyl	-(CH ₂) ₄ -		
1.55	ethyl	ethyl	-(CH ₂) ₄ -		
1.56	ethyl	ethyl	-(CH ₂) ₄ -		
1.57	ethyl	ethyl	-(CH ₂) ₄ -		

No.	R ₁	R ₂	R ₄ /R ₅	G ₁	Physical data
1.58	ethyl	ethyl	-(CH ₂) ₄ -		
1.59	ethyl	ethyl	-(CH ₂) ₄ -		
1.60	ethyl	ethyl	-(CH ₂) ₄ -		
1.61	ethyl	ethyl	-(CH ₂) ₄ -		
1.62	ethyl	ethyl	-(CH ₂) ₄ -		
1.63	ethyl	ethyl	-(CH ₂) ₄ -		
1.64	ethyl	ethyl	-(CH ₂) ₄ -		
1.65	ethyl	ethyl	-(CH ₂) ₄ -	-CH ₂ -OMe	
1.66	ethyl	ethyl	-(CH ₂) ₄ -	-CH ₂ -SMe	
1.67	ethyl	ethyl	-(CH ₂) ₄ -		
1.68	ethyl	ethyl	-(CH ₂) ₄ -		
1.69	ethyl	ethyl	-(CH ₂) ₄ -		
1.70	ethyl	ethyl	-(CH ₂) ₄ -		
1.71	ethyl	ethyl	-(CH ₂) ₄ -		
1.72	MeO-	ethyl	-(CH ₂) ₄ -		
1.73	ethyl-	ethynyl	-(CH ₂) ₄ -		










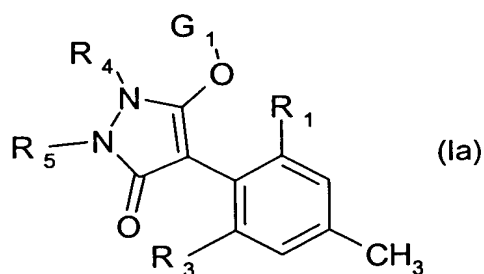


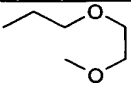
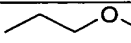

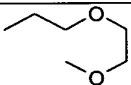

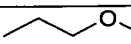
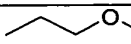
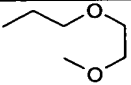
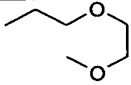

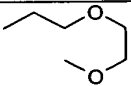
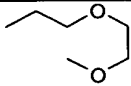
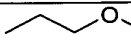
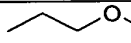

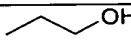
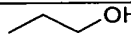







No.	R ₁	R ₂	R ₄ /R ₅	G ₁	Physical data
1.74	-OCHF ₂	ethyl	-(CH ₂) ₄ -		
1.75	-CHO	ethyl	-(CH ₂) ₄ -		
1.76		ethyl	-(CH ₂) ₄ -		
1.77		ethyl	-(CH ₂) ₄ -		
1.78	MeO-	MeO-	-(CH ₂) ₄		
1.79	MeO-	ethyl	-(CH ₂) ₄ -	-H	
1.80	ethyl-	ethynyl	-(CH ₂) ₄ -	-H	
1.81	-OCHF ₂	ethyl	-(CH ₂) ₄ -	-H	
1.82	-CHO	ethyl	-(CH ₂) ₄ -	-H	
1.83		ethyl	-(CH ₂) ₄ -	-H	
1.84		ethyl	-(CH ₂) ₄ -	-H	
1.85	MeO-	MeO-	-(CH ₂) ₄	-H	

Table 2: Compounds of formula Ia:



No.	R ₁	R ₂	R ₄	R ₅	G ₁	Physical data
2.01	ethyl	ethyl	methyl		-H	wax
2.02	ethyl	ethyl	methyl		-H	solid

No.	R ₁	R ₂	R ₄	R ₅	G ₁	Physical data
2.03	ethyl	ethyl	methyl		-H	solid
2.04	ethyl	ethyl	methyl			wax
2.05	ethyl	ethyl	methyl			wax
2.06	ethyl	ethyl			-H	m.p. 171-172
2.07	ethyl	ethyl				wax
2.08	ethyl	ethyl			-H	amorphous
2.09	ethyl	ethyl				amorphous
2.10	ethyl	ethyl			-H	
2.11	ethyl	ethyl	methyl	methyl		
2.12	ethyl	ethyl	methyl	methyl	-SO ₂ CH ₃	
2.13	ethyl	MeO-	methyl	methyl		
2.14	ethyl	ethynyl	methyl	methyl		
2.15	ethyl	ethyl	methyl	-phenyl		
2.16	ethyl	ethyl	methyl	-3-pyridyl		
2.17	ethyl	ethyl	methyl	-2-thienyl		
2.18	ethyl	ethyl	methyl	-allyl		





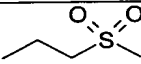
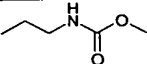
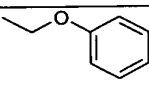
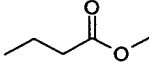
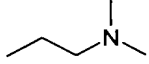
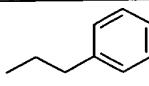
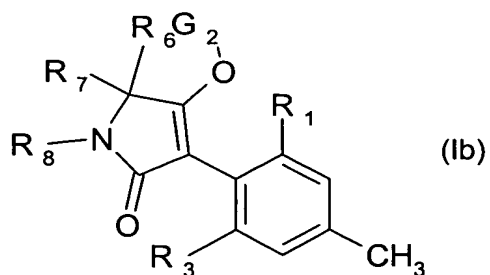



No.	R ₁	R ₂	R ₄	R ₅	G ₁	Physical data
2.19	ethyl	ethyl	methyl	-crotyl		
2.20	ethyl	ethyl	methyl	-4-chloro-phenyl		
2.21	MeO-	MeO-	methyl	allyl	-H	
2.22	ethynyl	ethyl	phenyl-	phenyl	-H	
2.23	ethynyl	ethyl	phenyl		-H	
2.24	ethyl	ethyl		methyl-	-H	
2.25	ethyl	ethyl		methyl-	-H	
2.26	ethyl	ethyl	phenyl		-H	
2.27	ethyl	ethyl		methyl-	-H	
2.28	ethyl	ethyl	-benzyl	methyl-	-H	
2.29	ethyl	ethyl		methyl-	-H	
2.30	ethyl	ethyl		methyl-	-H	
2.31	ethyl	ethyl		methyl-	-H	

Table 3: Compounds of formula Ib:



No.	R ₁	R ₃	R ₆	R ₇	R ₈	G ₂	Physical data
3.01	ethyl	ethyl	-Me	-Me	-Me	-H	
3.02	ethyl	ethyl	-Me	-H	-Me	-H	
3.03	ethyl	ethyl	-CH ₂ -CH ₂ -O-CH ₂ -CH ₂ -		-Me	-H	
3.04	ethynyl	ethyl	-CH ₂ -CH ₂ -		-allyl	-H	
3.05	ethyl	ethyl	-CH ₂ -C(Cl) ₂ -		-Me		
3.06	ethyl	ethyl	-(CH ₂) ₂ -		-Me	-H	
3.07	ethyl	ethyl	-(CH ₂) ₂ -CH(CH ₃)-(CH ₂) ₂ -		-Me	-H	
3.08	ethyl	ethyl	-(CH ₂) ₂ -C(CH ₃) ₂ -(CH ₂) ₂ -		-Me	-H	
3.09	ethynyl	ethyl	-(CH ₂) ₄ -		-Me	-H	
3.10	MeO-	ethyl	-(CH ₂) ₂ -		-H	-H	
3.11	MeO-	ethyl	-(CH ₂) ₂ -		-methyl		
3.12	-C(O)CH ₃		-(CH ₂) ₂ -		-methyl	-H	
3.13	-OCHF ₂		-(CH ₂) ₂ -		-methyl		

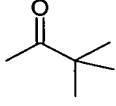
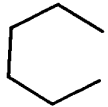
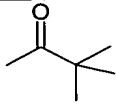
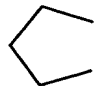
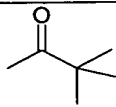
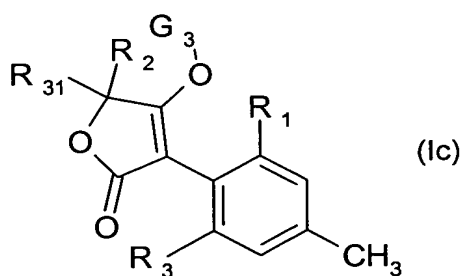
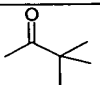
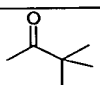
No.	R ₁	R ₃	R ₆	R ₇	R ₈	G ₂	Physical data
3.14	ethyl	ethyl	-(CH ₂) ₃ -		Me		
3.15	ethyl	ethyl	Me				
3.16	ethyl	ethyl	Me				

Table 4: Compounds of formula Ic:



No.	R ₁	R ₃	R ₂	R ₃₁	G ₃	Physical Data
4.01	ethyl	Ethyl	methyl	-Me	-H	
4.02	ethyl	Ethyl	methyl	-Me		
4.03	ethyl	Ethyl	methyl	ethyl	-H	
4.04	ethyl	Ethynyl	methyl	-Me	-H	
4.05	ethyl	Ethynyl	methyl	-Me		
4.06	ethyl	Methoxy	methyl	-Me	-H	
4.07	ethyl	Ethyl	-(CH ₂) ₂ -		-H	






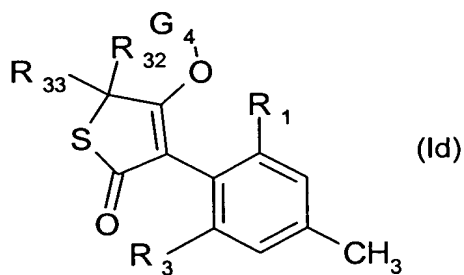

No.	R ₁	R ₃	R ₂	R ₃₁	G ₃	Physical Data
4.08	ethyl	Ethyl	$-(CH_2)_2-CH(CH_3)-(CH_2)_2-$			
4.09	ethyl	Ethyl	$-(CH_2)_2-C(CH_3)_2-(CH_2)_2-$			
4.10	ethyl	Ethyl	$-(CH_2)_4-$		-H	
4.11	ethyl	Ethyl	$-CH_2-CH_2-O-CH_2-CH_2-$			
4.12	ethyl	Ethyl	methyl	-isopropyl	-H	
4.13	ethyl	Ethyl	methyl	-ethyl	-H	
4.14	ethyl	Ethyl	methyl	-n-butyl		
4.15	ethyl	Ethyl	methyl	-H		

Table 5: Compounds of formula Id:



No.	R ₁	R ₃	R ₃₂	R ₃₃	G ₄	Physical data
5.01	ethyl	ethyl	methyl	-Me	-H	
5.02	ethyl	ethyl	methyl	-Me		
5.03	ethyl	ethyl	methyl	ethyl	-H	
5.04	ethyl	ethynyl	methyl	-Me	-H	








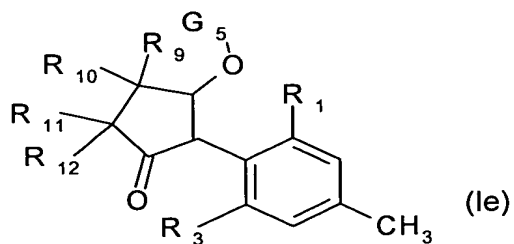
No.	R ₁	R ₃	R ₃₂	R ₃₃	G ₄	Physical data
5.05	ethyl	ethynyl	methyl	-Me		
5.06	ethyl	methoxy	methyl	-Me	-H	
5.07	ethyl	ethyl	-(CH ₂) ₂ -		-H	
5.08	ethyl	ethyl	-(CH ₂) ₂ -CH(CH ₃)-(CH ₂) ₂ -			
5.09	ethyl	ethyl	-(CH ₂) ₂ -C(CH ₃) ₂ -(CH ₂) ₂ -			
5.10	ethyl	ethyl	-(CH ₂) ₄ -			
5.11	ethyl	ethyl	-CH ₂ -CH ₂ -O-CH ₂ -CH ₂ -			
5.12	ethyl	ethyl	methyl	-isopropyl	-H	
5.13	ethyl	ethyl	methyl	-ethyl	-H	
5.14	ethyl	ethyl	methyl	-n-butyl		
5.15	ethyl	ethyl	methyl	-H		

Table 6: Compounds of formula 1e:



No.	R ₁	R ₃	R ₉	R ₁₀	R ₁₁	R ₁₂	G ₅	Physical data
6.01	ethyl	ethyl	methyl	-H	-methyl	-H		
6.02	ethyl	ethyl	methyl	methyl	-H	-H		
6.03	ethyl	ethyl	-(CH ₂) ₂ -		-H	-H	-H	
6.04	ethyl	ethyl	-(CH ₂) ₄ -		methyl	-H	-H	
6.05	ethyl	ethyl	-CH ₂ -CH ₂ -O-CH ₂ -CH ₂ -		-H	-H		
6.06	ethyl	ethyl	-H	methyl	-(CH ₂) ₄ -			
6.07	ethyl	ethyl	-H	-O-		-H		
6.08	ethyl	ethyl	-H	-CH ₂ -		-H		
6.09	ethyl	ethynyl	-H	-(CH ₂) ₃ -		-H		
6.10	ethyl	MeO-	-H	-(CH ₂) ₄ -		-H		


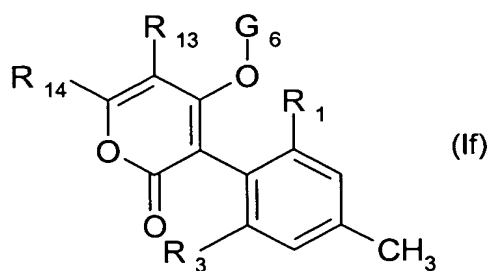
No.	R ₁	R ₃	R ₉	R ₁₀	R ₁₁	R ₁₂	G ₅	Physical data
6.11	ethyl	ethynyl	-H	-(CH ₂) ₄ -		-H		

Table 7: Compounds of formula If:




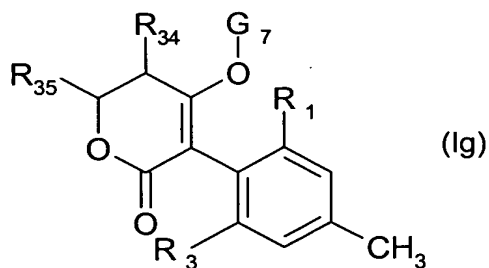
No.	R ₁	R ₂	R ₁₃	R ₁₄	G ₆	Phys. data
7.01	ethyl	ethyl	methyl	methyl	-H	
7.02	ethyl	ethyl	methyl	-H	-H	
7.03	ethyl	ethyl	-H	methyl	-H	
7.04	ethyl	ethyl	ethyl	methyl	-H	
7.05	ethyl	ethyl	-(CH ₂) ₄ -		-H	
7.06	ethyl	MeO-	-(CH ₂) ₄ -		-H	
7.07	ethyl	ethynyl	-(CH ₂) ₄ -			
7.08	ethyl	ethynyl	-(CH ₂) ₃ -		-H	

Table 8: Compounds of formula Ig:







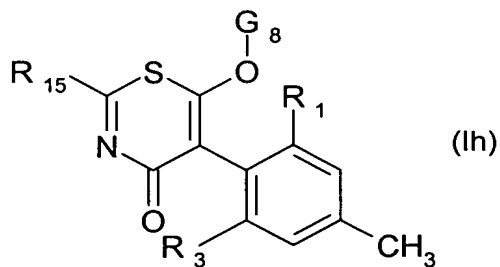
No.	R ₁	R ₂	R ₃₄	R ₃₅	G ₇	Phys. data
8.01	ethyl	ethyl	methyl	methyl	-H	
8.02	ethyl	ethyl	methyl	-H	-H	
8.03	ethyl	ethyl	-H	methyl	-H	
8.04	ethyl	ethyl	ethyl	methyl	-H	
8.05	ethyl	ethyl	-(CH ₂) ₄ -			
8.06	ethyl	ethyl	-(CH ₂) ₃ -			
8.07	ethyl	ethynyl	methyl	methyl		
8.08	ethyl	methoxy	methyl	methyl		

Table 9: Compounds of formula 1h:









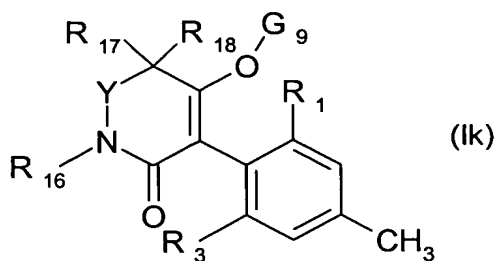



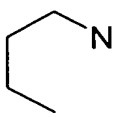






No.	R ₁	R ₃	R ₁₅	G ₈	Physical data
9.01	ethyl	ethyl	methyl	-H	
9.02	ethyl	methoxy	phenyl	-H	
9.03	ethyl	ethynyl	-4-chloro-phenyl	-H	
9.04	ethyl	ethyl	ethyl		
9.05	ethyl	ethyl	-OMe		
9.06	ethyl	ethyl	-CF ₃		
9.07	ethyl	ethyl	isopropyl		
9.08	ethyl	ethyl	n-butyl		
9.09	ethyl	ethyl	cyclopropyl		

Table 10: Compounds of formula Ik:

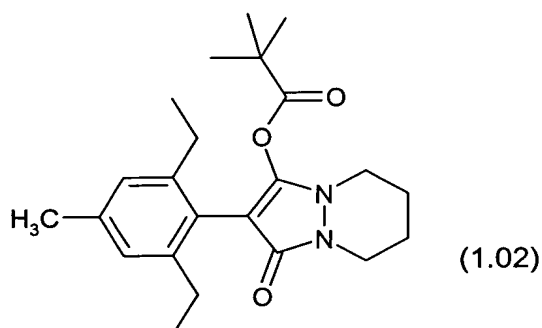


No.	R ₁	R ₃	R ₁₆	Y	R ₁₇	R ₁₈	G ₉	Phys. data
10.01	ethyl	ethyl	methyl	O	methyl	-H		
10.02	ethyl	ethyl	methyl	O	methyl	methyl		
10.03	ethyl	ethyl	methyl	N-CH ₃	methyl	methyl		
10.04	ethyl	ethyl	methyl			-H		
10.05	ethyl	ethyl	methyl	-CH ₂ -	methyl	methyl		
10.06	ethyl	ethyl	methyl	-CH ₂ -	methyl	-H		
10.07	ethyl	ethyl	ethyl	-CH ₂ -	-(CH ₂) ₂ -			
10.08	ethyl	ethynyl	methyl	-CH ₂ -	-H	methyl		
10.09	ethyl	MeO-	methyl	-CH ₂ -	methyl	methyl		

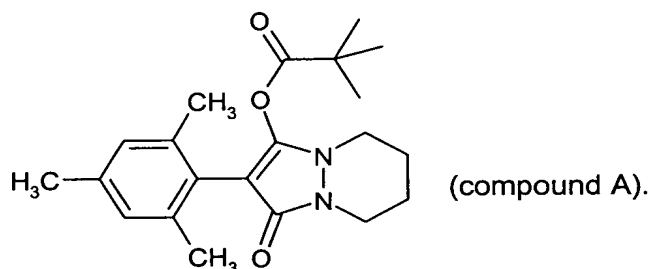
Biological ExamplesComparison test:

The following compounds were tested for their herbicidal action:

compound no. 1.02



according to the present invention, and compound A

Example B1: Herbicidal action prior to emergence of the plants (pre-emergence action)

Monocotyledonous and dicotyledonous weeds are sown in plastics pots in standard soil. Immediately after sowing, the test substances are applied in the form of an aqueous suspension (prepared from a 25 % wettable powder (Example F3, b)) or in the form of an emulsion (prepared from a 25 % emulsifiable concentrate (Example F1, c)) (500 litres of water/ha). The rate of application is 500 g of active substance/ha. The test plants are then grown in the greenhouse under optimum conditions. The evaluation is carried out 3 weeks after application, using a scale of nine ratings (1 = total damage, 9 = no action). Ratings of from 1 to 4 (especially from 1 to 3) indicate good to very good herbicidal action.

Test plants: Alopecurus (Alo), Avena (Ave), Lolium (Lol), Setaria (Set), Panicum (Pan), Sorghum (Sor), Digitaria (Dig), Echinocloa (Ech) and Brachiaria (Bra).

Table B1: Pre-emergence action:

Pre-emergence action at 500 g of active ingredient/ha

Comp. No.	Alo	Ave	Lol	Set	Pan	Sor	Dig	Ech	Bra
compound A	2	4	1	2	1	4	4	5	3
1.02	1	1	1	1	1	1	4	1	1

Example B2: Herbicidal action after emergence of the plants (post-emergence action):

Monocotyledonous and dicotyledonous weeds are grown in standard soil in plastics pots under greenhouse conditions. The test substances are applied to the test plants at the 3- to 6-leaf stage. The test substances are applied at a rate of application of 500 g of active substance per hectare in the form of an aqueous suspension (prepared from a 25 % wettable powder (Example F3, b)) or in the form of an emulsion (prepared from a 25 % emulsifiable concentrate (Example F1, c)) (500 litres of water/ha). The evaluation is carried out 3 weeks after application, using a scale of nine ratings (1 = total damage, 9 = no action). Ratings of from 1 to 4 (especially from 1 to 3) indicate good to very good herbicidal action.

Test plants: Alopecurus (Alo), Avena (Ave), Lolium (Lol), Setaria (Set), Panicum (Pan), Sorghum (Sor), Digitaria (Dig), Echinocloa (Ech) and Brachiaria (Bra).

Table B2: Post-emergence action:

Post-emergence action at 250 g of active ingredient/ha

Comp. No.	Alo	Ave	Lol	Set	Pan	Sor	Dig	Ech	Bra
compound A	3	3	2	2	1	3	2	1	2
1.02	1	1	1	1	1	1	2	1	1

By comparing the herbicidal activity of compound A with compound no. 1.02 of the present invention, it can be seen that, in the case of all weeds tested, compound no. 1.02 surprisingly exhibits an appreciably improved herbicidal action, although the only difference between that compound and compound A is that two ethyl groups have been replaced by methyl groups.

Example B3: Herbicidal action prior to the emergence of the plants (pre-emergence action) of compounds of the present invention:

Monocotyledonous and dicotyledonous weeds are sown in standard soil in plastics pots. Immediately after sowing, the test substances are applied in the form of an aqueous suspension (prepared from a 25 % wettable powder (Example F3, b)) or in the form of an emulsion (prepared from a 25 % emulsifiable concentrate (Example F1, c)) (500 litres of water/ha). The rate of application is 500 g of active substance/ha. The test plants are then grown in the greenhouse under optimum conditions, The evaluation is carried out 3 weeks after application, using a scale of nine ratings (1 = total damage, 9 = no action). Ratings of from 1 to 4 (especially from 1 to 3) indicate good to very good herbicidal action.

Test plants: Avena (Ave), Lolium (Lol), Setaria (Set).

Table B3: Pre-emergence action: MERGE® is used as oil additive in a concentration of 0.7 % by weight of the spray mixture

Comp. No.	Test plant:		
	Ave	Lol	Set
1.01	1	1	1
1.02	1	1	1
1.31	1	1	2
1.35	1	1	1

The same results are obtained when the compounds of formula I are formulated in accordance with Examples F2 and F4 to F8.

Example B4: Herbicidal action after the emergence of the plants (post-emergence action) of compounds of the present invention:

Test plants: Avena (Ave), Lolium (Lol), Setaria (Set).

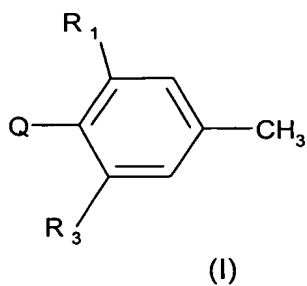
Table B4: Post-emergence action: MERGE® is used as oil additive in a concentration of 0.7 % by weight of the spray mixture.

Comp. No.	Test plant:		
	Ave	Lol	Set
1.01	1	1	1
1.02	1	1	1
1.04	1	1	1
1.05	1	3	1
1.07	1	1	1
1.08	1	1	1
1.10	1	1	1
1.11	1	1	1
1.14	1	2	2
1.15	1	2	1
1.17	1	1	2
1.19	1	1	1
1.21	1	1	1
1.23	1	1	1
1.26	1	2	1
1.27	1	1	2
1.30	1	1	1
1.31	1	1	1
1.35	1	1	1
1.37	1	1	1
1.39	1	1	1
1.40	1	1	2
1.43	1	2	2

The same results are obtained when the compounds of formula I are formulated in accordance with Examples F2 and F4 to F8.

Patent Claims:

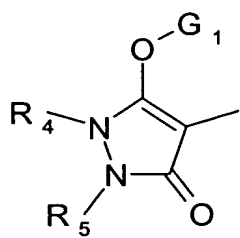
1. A compound of formula I



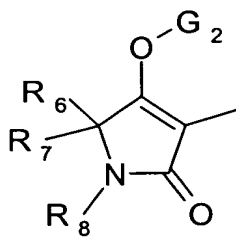
wherein

R_1 and R_3 are each independently of the other ethyl, haloethyl, ethynyl, C_1 - C_2 alkoxy, C_1 - C_2 haloalkoxy, C_1 - C_2 alkylcarbonyl, C_1 - C_2 hydroxyalkyl or C_1 - C_2 alkoxycarbonyl;

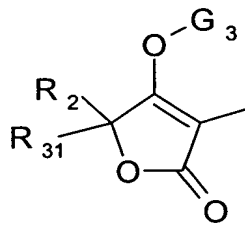
Q is a group



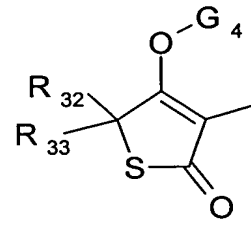
(Q₁),



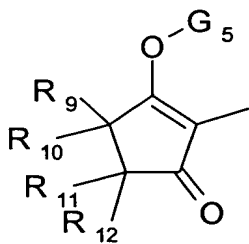
(Q₂),



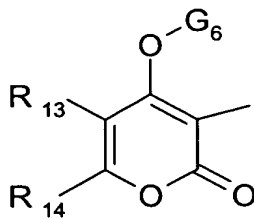
(Q₃),



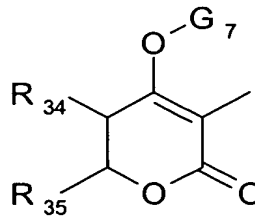
(Q₄),



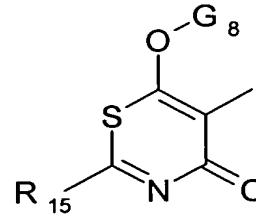
(Q₅),



(Q₆),

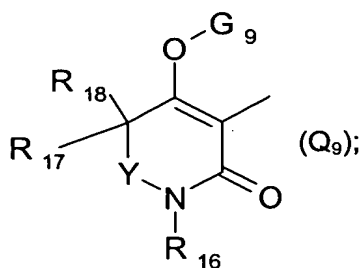


(Q₇),



(Q₈)

or



R₄ and R₅ are each independently of the other C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkylcarbonylalkyl, C₂-C₁₀-N-alkoxyiminoalkyl, C₂-C₁₀-alkoxycarbonylalkyl, C₁-C₁₀aminoalkyl, C₃-C₁₀dialkylaminoalkyl, C₂-C₁₀alkylaminoalkyl, C₁-C₁₀cyanoalkyl, C₄-C₁₀cycloalkylalkyl, C₁-C₁₀phenylalkyl, C₁-C₁₀heteroarylalkyl, C₁-C₁₀phenoxyalkyl, C₁-C₁₀heteroaryloxyalkyl, C₁-C₁₀alkylideneaminoalkyl, C₁-C₁₀nitroalkyl, C₁-C₁₀trialkylsilylalkyl, C₂-C₁₀alkylaminocarbonylalkyl, C₂-C₁₀dialkylaminocarbonylalkyl, C₂-C₁₀alkylaminocarbonyloxyalkyl, C₃-C₁₀dialkylaminocarbonyloxalkyl, C₂-C₁₀alkoxycarbonylaminoalkyl, C₁-C₁₀-N-alkoxycarbonyl-N-alkylaminoalkyl, C₁-C₁₀cycloalkyl, aryl or heteroaryl; or

R₄ and R₅, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur and that, in addition, may contain a fused or spiro-bound alkylene or alkenylene chain consisting of from 2 to 6 carbon atoms, which chain may in turn contain one or two hetero atoms selected from oxygen and sulfur;

R₂, R₆ and R₃₂ are each independently of the others C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkylcarbonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl;

R₇, R₃₁ and R₃₃ are each independently of the others hydrogen, C₁-C₁₀alkyl or C₂-C₁₀alkoxyalkyl;

R₈ is hydrogen, C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl; or

R₆ and R₇ or R₂ and R₃₁ or R₃₂ and R₃₃, together with the atom to which they are bonded, form a saturated 3- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur; or R₆ and R₈, together with the atoms to which

they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₉, R₁₀, R₁₁ and R₁₂ are each independently of the others C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthialkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkylcarbonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl; or

R₉ and R₁₁ or R₉ and R₁₀, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₁₃, R₁₄, R₃₄ and R₃₅ are each independently of the others C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkylcarbonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl; or

R₁₃ and R₁₄ or R₃₄ and R₃₅, together with the atoms to which they are bonded, form a 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

R₁₅ is C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyl-oxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkyl-carbonylalkyl, C₂-C₁₀alkoxycarbonylalkyl, C₁-C₁₀aminoalkyl, C₃-C₁₀dialkylaminoalkyl, C₂-C₁₀alkylaminoalkyl, C₁-C₁₀cyanoalkyl, C₄-C₁₀cycloalkylalkyl, C₁-C₁₀phenylalkyl, C₁-C₁₀-heteroarylalkyl, C₁-C₁₀phenoxyalkyl, C₁-C₁₀heteroaryloxyalkyl, C₁-C₁₀nitroalkyl, C₃-C₁₀cyclo-alkyl, aryl or heteroaryl;

R₁₆ is C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyl-oxyalkyl, C₂-C₁₀alkylthiolalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl;

R₁₇ is C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₂-C₁₀alkoxyalkyl, C₃-C₁₀alkenyloxyalkyl, C₃-C₁₀alkynyl-oxyalkyl, C₂-C₁₀alkylthioalkyl, C₂-C₁₀alkylsulfinylalkyl, C₂-C₁₀alkylsulfonylalkyl, C₂-C₁₀alkyl-carbonylalkyl, C₃-C₁₀cycloalkyl, aryl or heteroaryl;

R₁₈ is hydrogen, C₁-C₁₀alkyl or C₁-C₁₀alkoxyalkyl; or

R₁₇ and R₁₈, together with the atoms to which they are bonded, form a 3- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

Y is oxygen, sulfur, C-R₁₉ or N-R₃₆;

R₁₉ and R₃₆ are each independently of the other C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, phenyl or heteroaryl; or

R₁₈ and R₁₉ or R₁₈ and R₃₆, together with the atom to which they are bonded, form a saturated 5- to 7-membered cyclic group that may contain one or two hetero atoms selected from nitrogen, oxygen and sulfur;

G₁, G₂, G₃, G₄, G₅, G₆, G₇, G₈ and G₉ are each independently of the others hydrogen, -C(X₁)-R₂₀, -C(X₂)-X₃-R₂₁, -C(X₄)-N(R₂₂)-R₂₃, -SO₂-R₂₄, an alkali metal cation, alkaline earth metal cation, sulfonium cation or ammonium cation, -P(X₅)(R₂₅)-R₂₆ or -CH₂-X₆-R₂₇;

X₁, X₂, X₃, X₄, X₅ and X₆ are each independently of the others oxygen or sulfur;

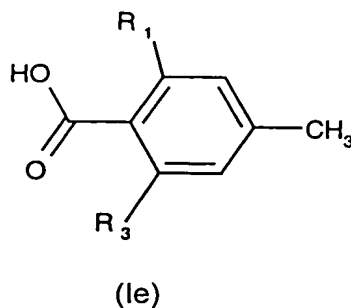
R₂₀, R₂₁, R₂₂ and R₂₃ are each independently of the others hydrogen, C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₁-C₁₀cyanoalkyl, C₁-C₁₀nitroalkyl, C₁-C₁₀aminoalkyl, C₁-C₅alkylamino-C₁-C₅alkyl, C₂-C₈dialkylamino-C₁-C₅alkyl, C₃-C₇cycloalkyl-C₁-C₅alkyl, C₂-C₁₀alkoxyalkyl, C₄-C₁₀alkenyl-oxyalkyl, C₄-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₁-C₅alkylsulfoxyl-C₁-C₅alkyl, C₁-C₅alkylsulfonyl-C₁-C₅alkyl, C₂-C₈alkylideneaminoxy-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-C₁-C₅alkyl, C₁-C₅alkoxycarbonyl-C₁-C₅alkyl, C₁-C₅aminocarbonyl-C₁-C₅alkyl, C₂-C₈dialkylaminocarbonyl-C₁-C₅alkyl, C₁-C₅alkylcarbonylamino-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-(C₂-C₅alkyl)-aminoalkyl, C₃-C₆trialkylsilyl-C₁-C₅alkyl, phenyl-C₁-C₅alkyl, heteroaryl-C₁-C₅alkyl, phenoxy-C₁-C₅alkyl, heteroaryloxy-C₁-C₅alkyl, C₂-C₅alkenyl, C₂-C₅haloalkenyl, C₃-C₈cycloalkyl, phenyl, or phenyl substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or heteroaryl or heteroaryl amino, or heteroaryl or heteroaryl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diheteroaryl amino, or diheteroaryl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, phenyl amino, or phenyl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diphenyl amino, or diphenyl amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or C₃-C₇cycloalkyl amino, di-C₃-C₇cycloalkyl amino or C₃-C₇cycloalkoxy;

R₂₄, R₂₅ and R₂₆ are hydrogen, C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₁-C₁₀cyanoalkyl, C₁-C₁₀nitroalkyl, C₁-C₁₀aminoalkyl, C₁-C₅alkylamino-C₁-C₅alkyl, C₂-C₈dialkylamino-C₁-C₅alkyl, C₃-C₇cycloalkyl-C₁-C₅alkyl, C₂-C₁₀alkoxyalkyl, C₄-C₁₀alkenyl-oxyalkyl, C₄-C₁₀alkynyloxyalkyl, C₂-C₁₀alkylthioalkyl, C₁-C₅alkylsulfoxyl-C₁-C₅alkyl, C₁-C₅alkylsulfonyl-C₁-C₅alkyl, C₂-C₈alkylideneaminoxy-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-C₁-C₅alkyl, C₁-C₅alkoxycarbonyl-C₁-C₅alkyl, C₁-C₅aminocarbonyl-C₁-C₅alkyl, C₂-C₈dialkylaminocarbonyl-C₁-C₅alkyl, C₁-C₅alkylcarbonylamino-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-(C₂-C₅alkyl)-aminoalkyl, C₃-C₆trialkylsilyl-C₁-C₅alkyl, phenyl-

C₁-C₅alkyl, heteroaryl-C₁-C₅alkyl, phenoxy-C₁-C₅alkyl, heteroaryloxy-C₁-C₅alkyl, C₂-C₅-alkenyl, C₂-C₅haloalkenyl, C₃-C₈cycloalkyl, phenyl, or phenyl substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or heteroaryl or heteroaryl-amino, or heteroaryl or heteroaryl-amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diheteroaryl-amino, or diheteroaryl-amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diphenyl-amino, or diphenyl-amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or C₃-C₇cycloalkyl-amino, di-C₃-C₇cycloalkyl-amino, C₃-C₇cycloalkoxy, C₁-C₁₀alkoxy, C₁-C₁₀haloalkoxy, C₁-C₅alkyl-amino, C₂-C₈dialkyl-amino, benzyloxy or phenoxy, wherein the benzyl and phenyl groups may in turn be substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃-alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro;

R₂₇ is C₁-C₁₀alkyl, C₁-C₁₀haloalkyl, C₁-C₁₀cyanoalkyl, C₁-C₁₀nitroalkyl, C₁-C₁₀aminoalkyl, C₁-C₅alkyl-amino-C₁-C₅alkyl, C₂-C₈dialkyl-amino-C₁-C₅alkyl, C₃-C₇cycloalkyl-C₁-C₅alkyl, C₂-C₁₀alkoxyalkyl, C₄-C₁₀alkenyl-oxyalkyl, C₄-C₁₀alkynyl-oxyalkyl, C₂-C₁₀alkylthioalkyl, C₁-C₅alkylsulfoxyl-C₁-C₅alkyl, C₁-C₅alkylsulfonyl-C₁-C₅alkyl, C₂-C₈alkylideneamino-oxy-C₁-C₅-alkyl, C₁-C₅alkylcarbonyl-C₁-C₅alkyl, C₁-C₅alkoxycarbonyl-C₁-C₅alkyl, C₁-C₅aminocarbonyl-C₁-C₅alkyl, C₂-C₈dialkylaminocarbonyl-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-amino-C₁-C₅alkyl, C₁-C₅alkylcarbonyl-(C₂-C₅alkyl)-aminoalkyl, C₃-C₆trialkylsilyl-C₁-C₅alkyl, phenyl-C₁-C₅alkyl, heteroaryl-C₁-C₅alkyl, phenoxy-C₁-C₅alkyl, heteroaryloxy-C₁-C₅alkyl, C₂-C₅alkenyl, C₂-C₅-haloalkenyl, C₃-C₈cycloalkyl, phenyl, or phenyl substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or heteroaryl or heteroaryl-amino, or heteroaryl or heteroaryl-amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diheteroaryl-amino, diheteroaryl-amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, or phenyl-amino, phenyl-amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, diphenyl-amino, diphenyl-amino substituted by C₁-C₃alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, C₃-C₇-cycloalkyl-amino, di-C₃-C₇cycloalkyl-amino, C₃-C₇cycloalkoxy or C₁-C₁₀alkylcarbonyl.

2. A process for the preparation of a compound of formula I according to claim 1, which comprises reacting a compound of formula Ie



wherein R_1 and R_3 are as defined for formula I, with a compound of formula Q_1 , Q_2 , Q_3 , Q_4 , Q_5 , Q_6 , Q_7 , Q_8 or Q_9 , wherein G_1 , G_2 , G_3 , G_4 , G_5 , G_6 , G_7 , G_8 and G_9 are hydroxy and the remaining substituents are as defined for formula I, in an inert organic solvent in the presence of a base and a coupling agent, and then isomerising in the presence of a base and a catalytic amount of a cyanide source.

3. A herbicidal and plant growth-inhibiting composition that comprises a herbicidally effective amount of a compound of formula I on an inert carrier.

4. A method of controlling undesired plant growth that comprises applying a herbicidally effective amount of an active ingredient of formula I, or of a composition comprising such an active ingredient, to the plants or to the locus thereof.

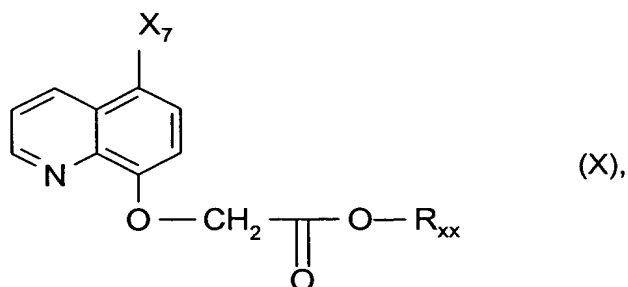
5. A method of inhibiting plant growth that comprises applying a herbicidally effective amount of an active ingredient of formula I, or of a composition comprising such an active ingredient, to the plants or to the locus thereof.

6. A selective-herbicidal composition that comprises as active ingredient, in addition to customary inert formulation adjuvants, a mixture of

a) a herbicidally effective amount of a compound of formula I according to claim 1, with the proviso that Q is other than Q_1 ;

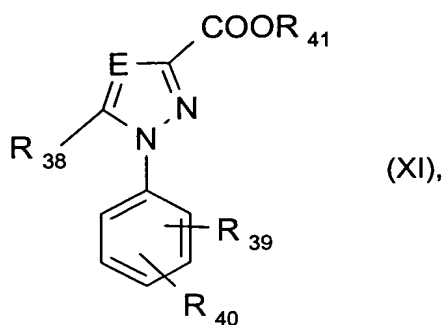
and

b) a herbicide-antagonistically effective amount either of a compound of formula X



wherein

R_{xx} is hydrogen, C_1 - C_8 alkyl, or C_1 - C_8 alkyl substituted by C_1 - C_6 alkoxy or by C_3 - C_6 alkenyloxy; and X_7 is hydrogen or chlorine; or of a compound of formula XI

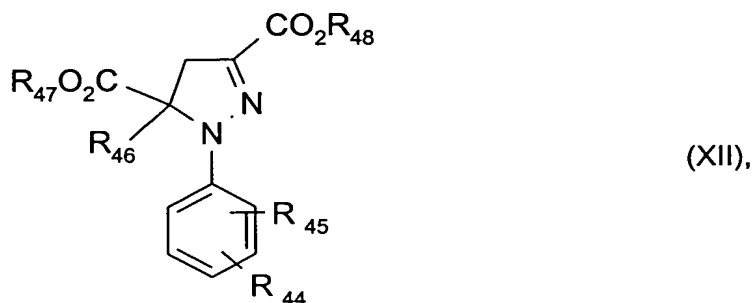


wherein E is nitrogen or methine;

R_{38} is $-CCl_3$, phenyl or phenyl substituted by halogen;

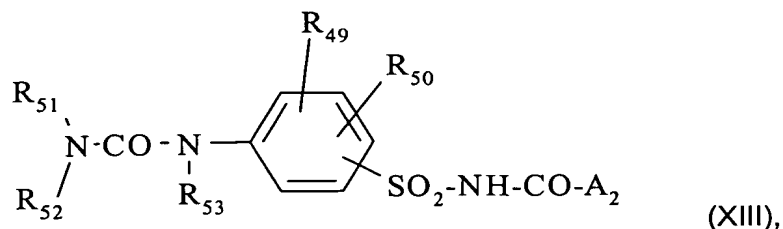
R_{39} and R_{40} are each independently of the other hydrogen or halogen; and

R_{41} is C_1 - C_4 alkyl; or of a compound of formula XII

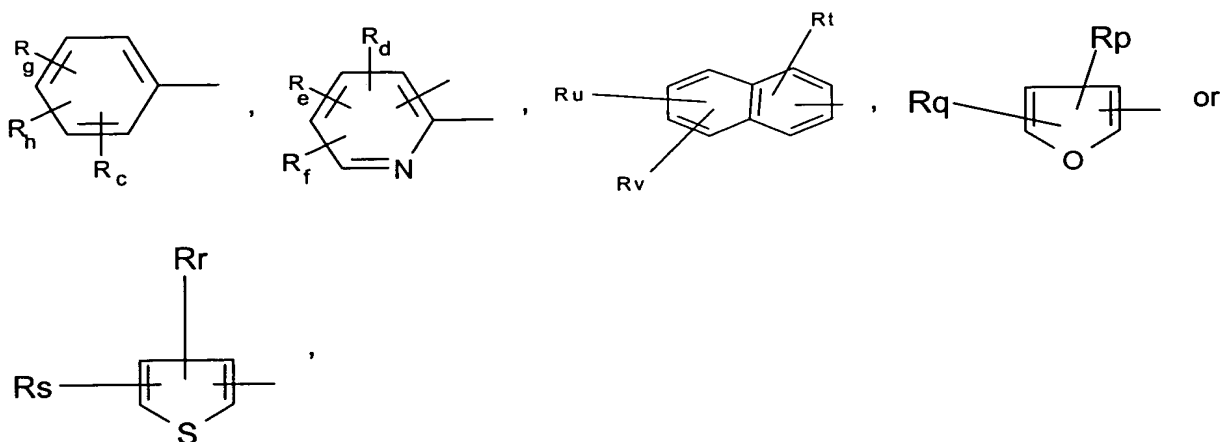


wherein R_{44} and R_{45} are each independently of the other hydrogen or halogen, and

R_{46} , R_{47} and R_{48} are each independently of the others C_1 - C_4 alkyl, or of a compound of formula XIII



wherein A₂ is a group



R₅₁ and R₅₂ are each independently of the other hydrogen, C₁-C₈alkyl, C₃-C₈cycloalkyl,

C₃-C₆alkenyl, C₃-C₆alkynyl, , or C₁-C₄alkyl substituted by C₁-C₄alkoxy

or by ; or R₅₁ and R₅₂ together form a C₄-C₆alkylene bridge that may be

interrupted by oxygen, sulfur, SO, SO₂, NH or by -N(C₁-C₄alkyl)-;

R₅₃ is hydrogen or C₁-C₄alkyl;

R₄₉ is hydrogen, halogen, cyano, trifluoromethyl, nitro, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, -COOR_j, -CONR_kR_m, -COR_n, -SO₂NR_kR_m or -OSO₂-C₁-C₄alkyl;

R_g is hydrogen, halogen, cyano, nitro, C₁-C₄alkyl, C₁-C₄haloalkyl, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, -COOR_j, -CONR_kR_m, -COR_n, -SO₂NR_kR_m, -OSO₂-C₁-C₄alkyl, C₁-C₆alkoxy, or C₁-C₆alkoxy substituted by C₁-C₄alkoxy or by halogen, C₃-C₆alkenyloxy, or C₃-C₆alkynyloxy substituted by halogen, or R₄₉ and R₅₀ together form a

C₃-C₄alkylene bridge that may be substituted by halogen or by C₁-C₄alkyl, or together form a C₃-C₄alkenylene bridge that may be substituted by halogen or by C₁-C₄alkyl, or together form a C₄alkadienylene bridge that may be substituted by halogen or by C₁-C₄alkyl;

R₅₀ and R_h are each independently of the other hydrogen, halogen, C₁-C₄alkyl, trifluoromethyl, C₁-C₆alkoxy, C₁-C₆alkylthio or -COOR_j;

R_c is hydrogen, halogen, nitro, C₁-C₄alkyl or methoxy; R_d is hydrogen, halogen, nitro, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, -COOR_j or CONR_kR_m;

R_e is hydrogen, halogen, C₁-C₄alkyl, -COOR_j, trifluoromethyl or methoxy, or R_d and R_e together form a C₃-C₄alkylene bridge;

R_p is hydrogen, halogen, C₁-C₄alkyl, -COOR_j, trifluoromethyl or methoxy; R_q is hydrogen, halogen, nitro, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, -COOR_j or CONR_kR_m; or R_p and R_q together form a C₃-C₄alkylene bridge;

R_r is hydrogen, halogen, C₁-C₄alkyl, -COOR_j, trifluoromethyl or methoxy; R_s is hydrogen, halogen, nitro, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, -COOR_j or CONR_kR_m; or R_r and R_s together form a C₃-C₄alkylene bridge;

R_t is hydrogen, halogen, C₁-C₄alkyl, -COOR_j, trifluoromethyl or methoxy; R_u is hydrogen, halogen, nitro, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylsulfinyl, C₁-C₄alkylsulfonyl, -COOR_j or CONR_kR_m; , or R_v and R_u together form a C₃-C₄alkylene bridge;

R_f and R_v are hydrogen, halogen or C₁-C₄alkyl;

R_x and R_y are each independently of the other hydrogen, halogen, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄alkylthio, -COOR₅₄, trifluoromethyl, nitro or cyano;

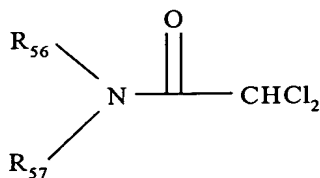
R_j, R_k and R_m are each independently of the others hydrogen or C₁-C₄alkyl; or

R_k and R_m together form a C₄-C₆alkylene bridge that may be interrupted by oxygen, NH or by -N(C₁-C₄alkyl)-;

R_n is C₁-C₄alkyl, phenyl, or phenyl substituted by halogen, C₁-C₄alkyl, methoxy, nitro or by trifluoromethyl;

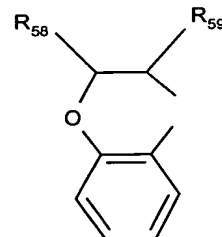
R₅₄ is hydrogen, C₁-C₁₀alkyl, C₁-C₄alkoxy-C₁-C₄alkyl, C₁-C₄alkylthio-C₁-C₄alkyl, di-C₁-C₄-alkylamino-C₁-C₄alkyl, halo-C₁-C₈alkyl, C₂-C₈alkenyl, halo-C₂-C₈alkenyl, C₃-C₈alkynyl, C₃-C₇cycloalkyl, halo-C₃-C₇cycloalkyl, C₁-C₈alkylcarbonyl, allylcarbonyl, C₃-C₇cycloalkyl-carbonyl, benzoyl, which is unsubstituted or substituted on the phenyl ring identically or differently up to three times by halogen, C₁-C₄alkyl, halo-C₁-C₄alkyl, halo-C₁-C₄alkoxy or C₁-C₄alkoxy; or furoyl, thienyl; or C₁-C₄alkyl substituted by phenyl, halophenyl, C₁-C₄alkyl-phenyl, C₁-C₄alkoxyphenyl, halo-C₁-C₄alkylphenyl, halo-C₁-C₄alkoxyphenyl, C₁-C₆alkoxy-

carbonyl, C₁-C₄alkoxy-C₁-C₈alkoxycarbonyl, C₃-C₈alkenyloxycarbonyl, C₃-C₈alkynyloxy-carbonyl, C₁-C₈alkylthiocarbonyl, C₃-C₈alkenylthiocarbonyl, C₃-C₈alkynylthiocarbonyl, carbamoyl, mono-C₁-C₄alkylaminocarbonyl, di-C₁-C₄alkylaminocarbonyl; or phenylamino-carbonyl, which is unsubstituted or substituted on the phenyl identically or differently up to three times by halogen, C₁-C₄alkyl, halo-C₁-C₄alkyl, halo-C₁-C₄alkoxy or C₁-C₄alkoxy or once by cyano or nitro; or dioxolan-2-yl, which is unsubstituted or substituted by one or two C₁-C₄-alkyl radicals, or dioxan-2-yl, which is unsubstituted or substituted by one or two C₁-C₄alkyl radicals, or C₁-C₄alkyl substituted by cyano, nitro, carboxyl or by C₁-C₈alkylthio-C₁-C₈alkoxy-carbonyl;
or of a compound of formula XIV



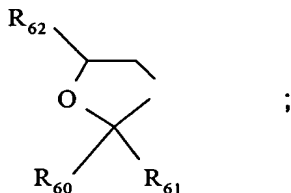
(XIV), wherein R₅₆ and R₅₇ are each independently of

the other C₁-C₆alkyl or C₂-C₆alkenyl; or R₅₆ and R₅₇ together are



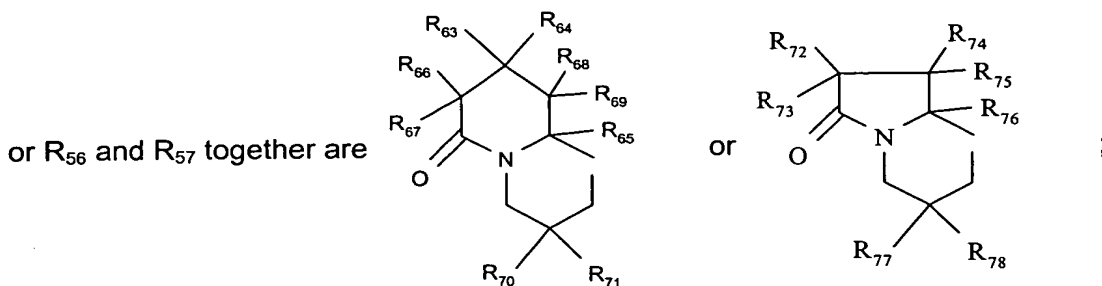
; R₅₈ and

R₅₉ are each independently of the other hydrogen or C₁-C₆alkyl; or R₅₆ and R₅₇ together are

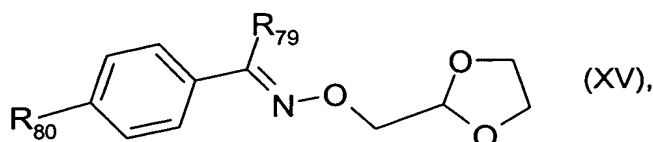


R₆₀ and R₆₁ are each independently of the other C₁-C₄alkyl, or R₆₀ and R₆₁ together are -(CH₂)₅-;

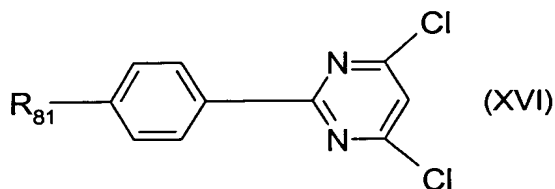
R₆₂ is hydrogen, C₁-C₄alkyl or ;



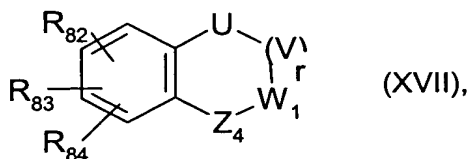
R_{63} , R_{64} , R_{65} , R_{66} , R_{67} , R_{68} , R_{69} , R_{70} , R_{71} , R_{72} , R_{73} , R_{74} , R_{75} , R_{76} , R_{77} and R_{78} are each independently of the others hydrogen or C_1 - C_4 alkyl;
or of a compound of formula XV



wherein R_{80} is hydrogen or chlorine and R_{79} is cyano or trifluoromethyl;
or of a compound of formula XVI



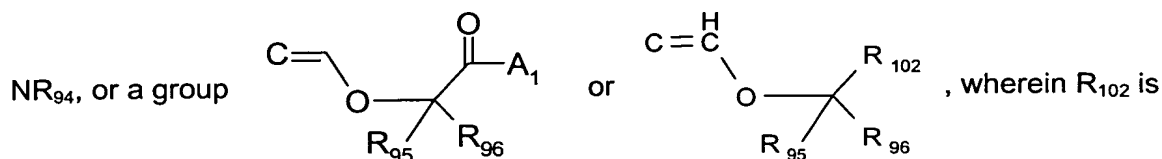
wherein R_{81} is hydrogen or methyl;
or of formula XVII



wherein

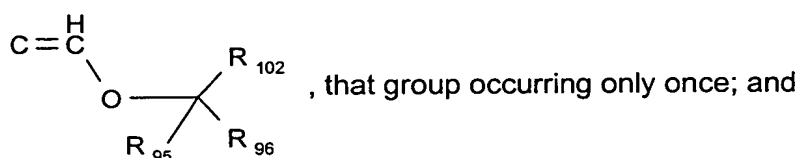
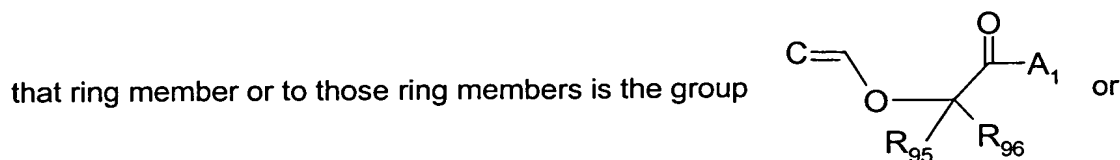
R_{82} is hydrogen, C_1 - C_4 alkyl, C_1 - C_4 alkyl substituted by C_1 - C_4 alkyl- X_2 - or by C_1 - C_4 haloalkyl- X_2 -,
 C_1 - C_4 haloalkyl, nitro, cyano, $-COOR_{85}$, $-NR_{86}R_{87}$, $-SO_2NR_{88}R_{89}$ or $-CONR_{90}R_{91}$;
 R_{83} is hydrogen, halogen, C_1 - C_4 alkyl, trifluoromethyl, C_1 - C_4 alkoxy or C_1 - C_4 haloalkoxy;
 R_{84} is hydrogen, halogen or C_1 - C_4 alkyl;

U, V, W₁ and Z₄ are each independently of the others oxygen, sulfur, C(R₉₂)R₉₃, carbonyl,



C₂-C₄alkenyl or C₂-C₄alkynyl; with the provisos that

a) at least one of the ring members U, V, W₁ or Z₄ is carbonyl, and a ring member adjacent to



b) two adjacent ring members U and V, V and W₁ and W₁ and Z₄ cannot simultaneously be oxygen;

R₉₅ and R₉₆ are each independently of the other hydrogen or C₁-C₈alkyl; or

R₉₅ and R₉₆ together form a C₂-C₆alkylene group;

A₁ is R₉₉-Y₁- or -NR₉₇R₉₈;

X₂ is oxygen or -S(O)_s;

Y₁ is oxygen or sulfur;

R₉₉ is hydrogen, C₁-C₈alkyl, C₁-C₈haloalkyl, C₁-C₄alkoxy-C₁-C₈alkyl, C₃-C₆alkenyloxy-C₁-C₈alkyl, or phenyl-C₁-C₈alkyl in which the phenyl ring may be substituted by halogen, C₁-C₄alkyl, trifluoromethyl, methoxy or by methyl-S(O)_s-, or is C₃-C₆alkenyl, C₃-C₆haloalkenyl, phenyl-C₃-C₆alkenyl, C₃-C₆alkynyl, phenyl-C₃-C₆alkynyl, oxetanyl, furyl or tetrahydrofuryl;

R₈₅ is hydrogen or C₁-C₄alkyl;

R₈₆ is hydrogen, C₁-C₄alkyl or C₁-C₄alkylcarbonyl;

R₈₇ is hydrogen or C₁-C₄alkyl; or

R₈₆ and R₈₇ together form a C₄- or C₅-alkylene group;

R₈₈, R₈₉, R₉₀ and R₉₁ are each independently of the others hydrogen or C₁-C₄alkyl; or R₈₈ together with R₈₉, or R₉₀ together with R₉₁, are each independently of the other C₄- or C₅-

alkylene in which one carbon atom may have been replaced by oxygen or by sulfur, or one or two carbon atoms may have been replaced by $-NR_{100}-$;

R_{92} , R_{100} and R_{93} are each independently of the others hydrogen or C_1-C_8 alkyl; or

R_{92} and R_{93} together are C_2-C_6 alkylene;

R_{94} is hydrogen or C_1-C_8 alkyl;

R_{97} is hydrogen, C_1-C_8 alkyl, phenyl or phenyl- C_1-C_8 alkyl, wherein the phenyl rings may be substituted by fluorine, chlorine, bromine, nitro, cyano, $-OCH_3$, C_1-C_4 alkyl or by CH_3SO_2- , or is C_1-C_4 alkoxy- C_1-C_8 alkyl, C_3-C_6 alkenyl or C_3-C_6 alkynyl;

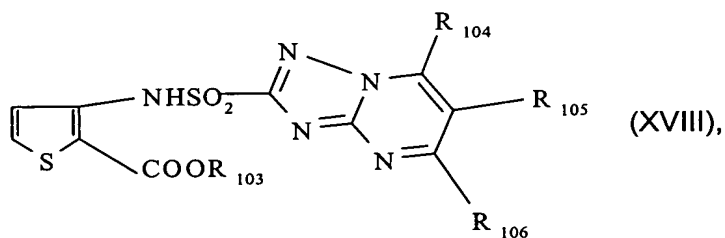
R_{98} is hydrogen, C_1-C_8 alkyl, C_3-C_6 alkenyl or C_3-C_6 alkynyl; or

R_{97} and R_{98} together are C_4- or C_5 -alkylene in which one carbon atom may have been replaced by oxygen or by sulfur, or one or two carbon atoms may have been replaced by $-NR_{101}-$;

R_{101} is hydrogen or C_1-C_4 alkyl;

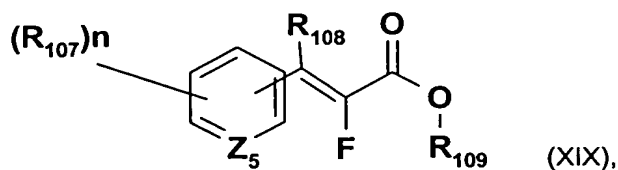
r is 0 or 1; and

s is 0, 1 or 2, or a compound of formula XVIII

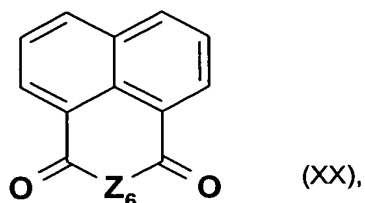


wherein R_{103} is hydrogen, C_1-C_6 alkyl, C_3-C_6 cycloalkyl, C_3-C_6 alkenyl or C_3-C_6 alkynyl; and R_{104} , R_{105} and R_{106} are each independently of the others hydrogen, C_1-C_6 alkyl, C_3-C_6 cycloalkyl or C_1-C_6 alkoxy, with the proviso that one of the substituents R_{104} , R_{105} and R_{106} is other than hydrogen;

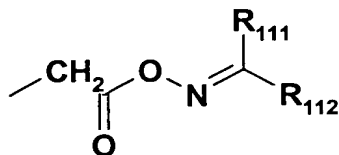
a compound of formula XIX



wherein Z_5 is N or CH, n is 0, 1, 2 or 3 when Z_5 is N, and n is 0, 1, 2, 3 or 4 when Z_5 is CH, R_{107} is halogen, C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkoxy, C_1 - C_4 haloalkoxy, nitro, C_1 - C_4 alkylthio, C_1 - C_4 alkylsulfonyl, C_1 - C_4 alkoxycarbonyl, phenyl or phenoxy, or phenyl or phenoxy substituted by C_1 - C_3 alkyl, C_1 - C_3 haloalkyl, C_1 - C_3 alkoxy, C_1 - C_3 haloalkoxy, halogen, cyano or by nitro, R_{108} is hydrogen or C_1 - C_4 alkyl, R_{109} is hydrogen, C_1 - C_4 alkyl, C_3 - C_6 cycloalkyl, C_2 - C_6 alkenyl, C_2 - C_6 alkynyl, C_1 - C_4 haloalkyl, C_2 - C_6 haloalkenyl, C_2 - C_6 haloalkynyl, C_1 - C_4 alkylthio- C_1 - C_4 alkyl, C_1 - C_4 alkylsulfonyl- C_1 - C_4 alkyl, C_1 - C_4 alkoxy- C_1 - C_4 alkyl, C_1 - C_4 alkenyloxy- C_1 - C_4 alkyl or C_1 - C_4 alkynyloxy- C_1 - C_4 alkyl;
a compound of formula XX

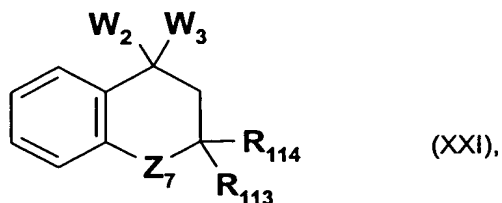


wherein Z_6 is oxygen or N- R_{110} and R_{110} is a group of formula



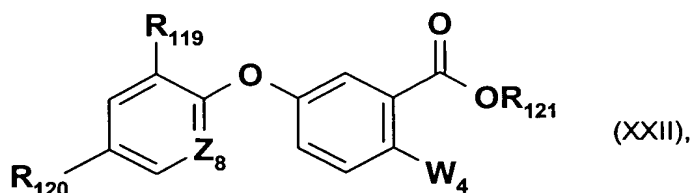
wherein R_{111} and R_{112} are each independently of the other cyano, hydrogen, C_1 - C_4 alkyl, C_3 - C_6 cycloalkyl, C_2 - C_6 alkenyl, aryl, phenyl or heteroaryl, or phenyl, aryl or heteroaryl substituted by C_1 - C_3 alkyl, C_1 - C_3 haloalkyl, C_1 - C_3 alkoxy, C_1 - C_3 haloalkoxy, halogen, cyano or by nitro;

a compound of formula XXI

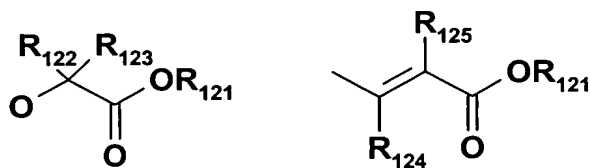


wherein Z_7 is oxygen, sulfur, S=O, SO_2 or CH_2 , R_{113} and R_{114} are each independently of the other hydrogen, halogen or C_1 - C_4 alkyl, W_2 and W_3 are each independently of the other CH_2COOR_{115} or $COOR_{0115}$ or together are a group of formula $-(CH_2)C(O)-O-C(O)-(CH_2)-$, and

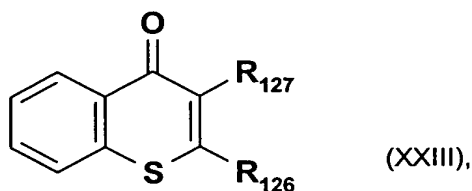
R_{115} and R_{0115} are each independently of the other hydrogen, C_1 - C_4 alkyl, C_2 - C_4 alkenyl, C_2 - C_6 alkynyl, C_3 - C_6 cycloalkyl, C_1 - C_4 haloalkyl, or a metal cation or an ammonium cation;
a compound of formula XXII



wherein R_{119} and R_{120} are each independently of the other hydrogen, halogen or C_1 - C_4 haloalkyl, R_{121} is hydrogen, C_1 - C_4 alkyl, C_3 - C_4 alkenyl, C_3 - C_4 alkynyl, C_1 - C_4 haloalkyl, C_3 - C_6 cycloalkyl, a metal cation or an ammonium cation, Z_8 is N, CH, C-F or C-Cl and W_4 is a group of formula



wherein R_{122} and R_{123} are each independently of the other hydrogen or C_1 - C_4 alkyl and R_{124} and R_{125} are each independently of the other hydrogen or C_1 - C_4 alkyl;
a compound of formula XXIII

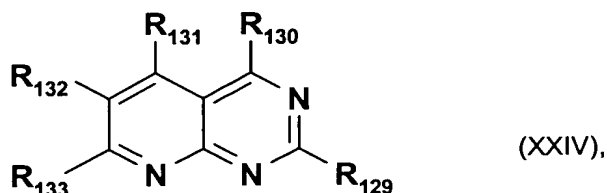


wherein R_{126} is hydrogen, cyano, halogen, C_1 - C_4 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkoxycarbonyl, C_1 - C_4 alkylthiocarbonyl, $-NH-R_{128}$, $-C(O)NH-R_{0128}$, aryl or heteroaryl, or aryl or heteroaryl substituted by C_1 - C_3 alkyl, C_1 - C_3 haloalkyl, C_1 - C_3 alkoxy, C_1 - C_3 haloalkoxy, halogen, cyano or by nitro,

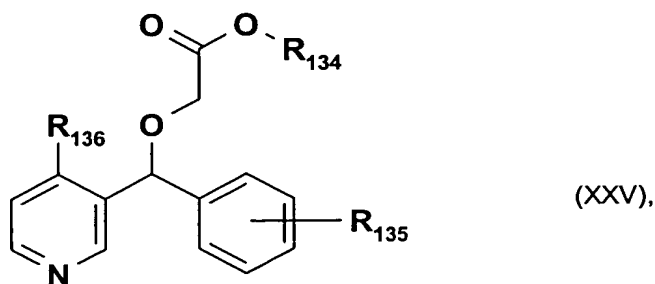
R_{127} is hydrogen, cyano, nitro, halogen, C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_1 - C_4 alkoxy or C_1 - C_4 thioalkyl, and

R_{128} and R_{0128} are each independently of the other C_1 - C_4 alkyl, C_1 - C_4 haloalkyl, C_3 - C_4 alkenyl, C_3 - C_4 alkynyl, C_3 - C_4 cycloalkyl, aryl or heteroaryl, or aryl or heteroaryl substituted by C_1 - C_3 -

alkyl, C₁-C₃haloalkyl, C₁-C₃alkoxy, C₁-C₃haloalkoxy, halogen, cyano or by nitro, formyl, C₁-C₄alkylcarbonyl or C₁-C₄alkylsulfonyl;
a compound of formula XXIV



wherein R₁₂₉ and R₁₃₀ are each independently of the other hydrogen, C₁-C₄alkyl, C₁-C₄haloalkyl, C₁-C₄alkoxy, mono-C₁-C₈- or di-C₁-C₈-alkylamino, C₃-C₆cycloalkyl, C₁-C₄thioalkyl, phenyl or heteroaryl, R₁₃₁ has the meanings of R₁₂₉ and in addition is OH, NH₂, halogen, di-C₁-C₄aminoalkyl, C₁-C₄alkylthio, C₁-C₄alkylsulfonyl or C₁-C₄alkoxycarbonyl, R₁₃₂ has the meanings of R₁₂₉ and in addition is cyano, nitro, carboxyl, C₁-C₄alkoxycarbonyl, di-C₁-C₄-aminoalkyl, C₁-C₄alkylthio, C₁-C₄alkylsulfonyl, SO₂-OH, i-C₁-C₄aminoalkylsulfonyl or C₁-C₄-alkoxysulfonyl, R₁₃₃ has the meanings of R₁₂₉ and in addition is OH, NH₂, halogen, di-C₁-C₄-aminoalkyl, pyrrolidin-1-yl, piperidin-1-yl, morpholin-1-yl, C₁-C₄alkylthio, C₁-C₄alkylsulfonyl, C₁-C₄alkoxycarbonyl, phenoxy, naphthoxy, phenylamino, benzoyloxy or phenylsulfonyloxy; or a compound of formula XXV



wherein R₁₃₄ is hydrogen, C₄alkyl, C₁-C₄haloalkyl, C₂-C₄alkenyl, C₂-C₄alkynyl or C₁-C₄alkoxy-C₁-C₄alkyl, R₁₃₅ is hydrogen, halogen, C₁-C₄alkyl, C₁-C₄haloalkyl or C₁-C₄alkoxy and R₁₃₆ is hydrogen, halogen, C₁-C₄alkyl, C₁-C₄haloalkyl or C₁-C₄alkoxy, with the proviso that R₁₃₅ and R₁₃₆ are not simultaneously hydrogen.

7. A method of selectively controlling weeds and grasses in crops of useful plants that comprises treating the useful plants, the seeds or the cuttings thereof or the area of cultivation thereof with a herbicidally effective amount of a herbicide of formula I and of a

herbicide-antagonistically effective amount of a safener of formula X, XI, XII, XIII, XIV, XV, XVI, XVII, XVIII, XIX, XX, XXI, XXII, XXIII, XXIV or XXV.

8. A composition according to claim 3 that comprises spray tank adjuvants.

9. A composition according to claim 6 that comprises spray tank adjuvants.